

## 2006 Algebra 1 Countywide Semester 1 Examination and HSA

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### Background

Beginning with the graduating class of 2009 (Grade 9 in 2005–2006), students seeking a Maryland High School Diploma must not only take, but also earn satisfactory scores on the High School Assessments (HSA) in four core subjects. Those subjects are Algebra 1; English 10; Biology; and National, State, and Local Government (NSL). In 2005–2006, nearly all Montgomery County Public Schools (MCPS) students who took the Algebra HSA were in Grade 9 or lower and thus were required to attain a satisfactory score on the test.

MCPS uses results of countywide Semester 1 examinations administered in January to identify students who may need support prior to taking an HSA in the same subject in May (MCPS, 2002, 2003a, 2003b, 2003c). Students who pass the Algebra 1 countywide Semester 1 examination are expected to pass the Algebra HSA (Achieve, Inc., 2003; MCPS, 2003c). This research brief compares the Algebra 1 semester examination and HSA passing rates of students in the Classes of 2009 or later.

### Methodology

The 9,554 students included in this analysis of the 2005–2006 countywide Semester 1 examination and HSA results were enrolled in Algebra 1A and 1B at the same school Semesters 1 and 2, respectively, and took both the Algebra 1 countywide Semester 1 examination in January and the Algebra HSA in May. Of these students, 5,874 were enrolled middle school, and 3,680 were enrolled in Grade 9 (high school).

Tables A1 to A3 provide district-level semester examination and HSA participation and passing rates disaggregated by gender; race/ethnicity; participation in Free and Reduced-price Meals System (FARMS), special education, and English Language Learner (ELL) services; and school.

This analysis excludes results for 1,072 students who were enrolled in Algebra 1A Semester 1 but did not take Algebra 1B Semester 2 (493) or did not take

both the Semester 1 examination and the HSA (579). Tables A4 to A5 identify Semester 1 Algebra 1A enrollees who did not take Algebra 1B Semester 2. Tables A6 to A7 identify enrollees who completed the course but did not take the Algebra 1 Semester 1 exam and/or the Algebra HSA.

### Results

Semester 1 examination passing rates were better predictors of middle school HSA passing rates than they were of Grade 9 HSA passing rates (Tables A1 to A3). In 2005–2006, 1.3% of middle school test takers passed the Algebra 1 Semester 1 examination but failed the Algebra HSA, compared with 6.7% of Grade 9 students (Table 1).

Nearly all (94.0%) middle school students who took both tests either passed both (92.3%) or failed both (1.7%). Middle school test takers who passed one test only were 3.7 times as likely to pass the HSA (4.8%) as they were to pass the Semester 1 examination (1.3%).

Table 1  
2005–2006 Algebra 1 Passing Rates on the  
Countywide Semester 1 Examination and HSA  
for Test Takers in Grades 6 to 9

Grade Level	Algebra 1 Semester 1 Exam	Algebra HSA	
		Pass	Fail
All (Grades 6 to 9)	Pass	78.7	3.3
	Fail	9.4	8.6
Middle School (Grades 6 to 8)	Pass	92.3	1.3
	Fail	4.8	1.7
High School (Grade 9)	Pass	57.1	6.7
	Fail	16.7	19.6

*Note:* Passing rates may not sum to 100% because of rounding.

About three fourths (76.7%) of Grade 9 students who took both tests either passed both (57.1%) or failed both (19.6%). Grade 9 students who passed one test only were 2.5 times as likely to pass the HSA

(16.7%) as they were to pass the Semester 1 examination (6.7%).

In middle school, more than 95% of Asian American and White students and more than 80% of African American and Hispanic students passed the Algebra 1 Semester 1 examination and the HSA. A similar difference in passing rates (about 20 percentage points) was observed in Grade 9, where about two thirds of Asian American and White students passed both tests compared with less than one half of African American and Hispanic students (Table A1).

Less than 80% of African American and Hispanic students either passed both tests or failed both tests. The agreement in pass/fail rates was higher among Asian American and White students, where more than 90% either passed both tests or failed both tests. More than 5% of African American and Hispanic students in Grades 6 through 9 passed the Algebra 1 semester examination but failed the Algebra HSA, compared with about 2% of Asian American and White students (Table A1). About 15% of African American and Hispanic students in Grades 6 through 9 failed the Algebra 1 semester examination but passed the Algebra HSA, compared with about 6% of Asian American and White students (Table A1).

About 80% of Algebra 1 middle school students who received FARMS, special education, or ELL services passed the Semester 1 examination and the HSA. In Grade 9, about 45% of Algebra 1 students who received FARMS, special education, or ELL services passed both tests. These percentages were more than 10 points lower than the respective Algebra 1 passing rates for all middle school (92.3) and Grade 9 (57.1) students (Table A1).

Districtwide, about 3.3% of Algebra 1 students passed the Semester 1 examination but failed the HSA. This discrepancy was two to four times higher among Algebra 1 students who received FARMS (6.4%), special education (7.0%), or ELL (13.3%) services (Table A1).

The percentages of middle school test takers who passed both tests, although high overall (92.3%), varied by 37.0 percentage points (63.0% to 100%) from one middle school to another (Table A2). Across all 38 middle schools, the percentages of students who passed the Algebra 1 semester examination but failed the Algebra HSA, ranged from 0% to 10.4%.

The percentages of Grade 9 test takers who passed both tests (57.1%) varied by more than 62.7 percentage points (20.3% to 83.0%) from one high school to another (Table A3). Across all 24 high

schools, the percentages of Grade 9 students who passed the Algebra 1 semester examination but failed the Algebra HSA, ranged from 2.7% to 9.7%.

Among Grade 9 students enrolled in special schools Semester 1 and 2, 6.7% passed both the Algebra 1 Semester 1 exam and the Algebra HSA compared with 57.1% for all Grade 9 students (Table A3). At special schools, Grade 9 students enrolled in Algebra 1 who took both tests were more likely to pass the Semester 1 exam (13.3%) than the HSA (0.0%).

## Discussion

Most students who pass the MCPS Algebra 1 Semester 1 examination also pass the Algebra HSA. However, Algebra 1 Semester 1 examination passing rates are not equally indicative of Algebra HSA performance for all students. In 2005–2006, students who passed the Algebra 1 Semester 1 examination but failed the Algebra HSA were more likely to be African American and Hispanic than Asian American and White. Algebra 1 Semester 1 examination passing rates also were less predictive of HSA performance for students who received FARMS, special education, and ELL services, or were enrolled in Grade 9.

Other measures such as Semester 1 final examination and course marks, and prior years' MSA proficiency levels could provide additional indicators of students' readiness for the Algebra HSA. Future research will identify combinations of indicators that are most reliable for all student groups.

## References

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**Table A1**  
**2005–2006 Algebra 1 Semester 1 Examination and HSA Participation and Passing Rates for**  
**Students Who Were Enrolled in Algebra 1A Semester 1 and Algebra 1B Semester 2 at the Same School**  
**by Demographic Group and School Level**

Demographic Group	All Test Takers					Middle School Test Takers					Grade 9 High School <sup>a</sup> Test Takers				
	<i>N</i> Took S1 Exam and HSA	% Passed S1 Exam and HSA	% Passed S1 Exam Failed HSA	% Passed HSA Failed S1 Exam	% Failed S1 Exam and HSA	<i>N</i> Took S1 Exam and HSA	% Passed S1 Exam and HSA	% Passed S1 Exam Failed HSA	% Passed HSA Failed S1 Exam	% Failed S1 Exam and HSA	<i>N</i> Took S1 Exam and HSA	% Passed S1 Exam and HSA	% Passed S1 Exam Failed HSA	% Passed HSA Failed S1 Exam	% Failed S1 Exam and HSA
All MCPS	9554	78.7	3.3	9.4	8.6	5874	92.3	1.3	4.8	1.7	3680	57.1	6.7	16.7	19.6
Male	4925	77.8	2.8	10.5	8.9	3068	91.8	1.1	5.5	1.7	1857	54.7	5.7	18.7	20.9
Female	4629	79.8	3.9	8.2	8.2	2806	92.9	1.5	4.0	1.6	1823	59.6	7.7	14.5	18.2
African American	1876	59.8	5.4	15.1	19.7	786	80.0	2.9	12.1	5.0	1090	45.2	7.2	17.2	30.3
Male	907	56.2	4.9	17.5	21.4	365	78.4	2.2	14.2	5.2	542	41.3	6.6	19.7	32.3
Female	969	63.2	6.0	12.8	18.1	421	81.5	3.6	10.2	4.8	548	49.1	7.8	14.8	28.3
Asian American	1580	89.1	2.3	5.3	3.3	1237	95.6	0.8	3.0	0.6	343	65.6	7.9	13.4	13.1
Male	837	87.9	2.5	5.9	3.7	656	95.3	0.8	3.4	0.6	181	61.3	8.8	14.9	14.9
Female	743	90.4	2.2	4.6	2.8	581	96.0	0.9	2.6	0.5	162	70.4	6.8	11.7	11.1
Hispanic	1528	62.6	6.0	14.4	17.1	642	82.9	3.0	9.8	4.4	886	47.9	8.1	17.7	26.3
Male	770	60.3	5.2	17.1	17.4	313	80.8	3.2	12.1	3.8	457	46.2	6.6	20.6	26.7
Female	758	64.9	6.7	11.6	16.8	329	84.8	2.7	7.6	4.9	429	49.7	9.8	14.7	25.9
White	4544	88.4	1.9	6.8	2.9	3194	96.0	0.7	2.7	0.7	1350	70.5	4.8	16.4	8.2
Male	2400	88.1	1.3	7.3	3.3	1726	95.4	0.5	3.2	0.9	674	69.4	3.4	17.8	9.3
Female	2144	88.8	2.5	6.2	2.6	1468	96.7	0.8	2.0	0.5	676	71.6	6.2	15.1	7.1
FARMS	1591	59.9	6.4	13.8	19.9	658	80.4	3.0	11.4	5.2	933	45.4	8.8	15.4	30.3
Special Education	712	56.2	7.0	11.5	25.3	191	88.0	3.1	2.6	6.3	521	44.5	8.4	14.8	32.2
ELL	406	58.1	13.3	4.2	24.4	114	85.1	8.8	1.8	4.4	292	47.6	15.1	5.1	32.2

<sup>a</sup> Includes special schools.

*Note:* 1.2% (70) of middle school students and 12.2% (509) of high school students who were enrolled in Algebra 1A and Algebra 1B Semesters 1 and 2, respectively, at the same school did not take both the Semester 1 examination and the HSA. Data for American Indian students are included with all students but are not reported separately.

**Table A2**  
**2005–2006 Algebra 1 Semester 1 Examination and HSA Performance of Students in the Classes of 2010 to 2012 (Grades 6 to 8)**  
**Who Were Enrolled in Algebra 1 at the Same School Semesters 1 and 2 and Took Both Tests by Middle School**

Middle School Test Takers	<i>N</i> Took S1 Exam and HSA	% Passed S1 Exam and HSA	% Passed S1 Exam Only	% Passed HSA Only	% Failed S1 Exam and HSA	Middle School Test Takers	<i>N</i> Took S1 Exam and HSA	% Passed S1 Exam and HSA	% Passed S1 Exam Only	% Passed HSA Only	% Failed S1 Exam and HSA
All	5874	92.3	1.3	4.8	1.7						
Argyle	96	80.2	10.4	4.2	5.2	Mont. Village	108	63.9	2.8	25.0	8.3
Baker	143	90.9	1.4	7.0	0.7	N. Bethesda	162	98.1	0.0	1.9	0.0
Banneker	118	71.2	0.8	20.3	7.6	Neelsville	115	95.7	0.0	0.9	3.5
Briggs Chaney	123	95.1	2.4	2.4	0.0	Newport Mill	117	88.0	4.3	7.7	0.0
Cabin John	236	99.6	0.4	0.0	0.0	Parkland	81	63.0	4.9	22.2	9.9
Clemente	194	95.4	0.5	3.1	1.0	Poole	114	100.0	0.0	0.0	0.0
E. Brooke Lee	85	78.8	0.0	15.3	5.9	Pyle	251	100.0	0.0	0.0	0.0
Eastern	174	84.5	1.1	12.6	1.7	Redland	163	87.1	0.6	8.6	3.7
Farquhar	118	100.0	0.0	0.0	0.0	Ridgeview	179	94.4	0.6	3.9	1.1
Forest Oak	155	89.7	3.2	5.8	1.3	Rocky Hill	144	98.6	0.0	1.4	0.0
Frost	280	100.0	0.0	0.0	0.0	Rosa Parks	145	100.0	0.0	0.0	0.0
Gaithersburg	157	96.8	1.9	0.6	0.6	S. S. International	116	75.9	1.7	16.4	6.0
Hoover	332	98.8	0.3	0.9	0.0	Shady Grove	139	95.0	2.2	2.9	0.0
Julius West	208	93.3	1.9	2.4	2.4	Sligo	98	98.0	1.0	0.0	1.0
Key	90	97.8	1.1	1.1	0.0	Takoma Park	251	92.4	0.8	3.6	3.2
Kingsview	200	90.5	1.5	6.0	2.0	Tilden	203	93.1	3.0	3.4	0.5
Lakelands Park	52	90.4	0.0	9.6	0.0	Westland	238	95.4	1.3	1.7	1.7
Loiederman	104	92.3	1.0	5.8	1.0	White Oak	134	68.7	0.7	23.9	6.7
Martin L. King	100	96.0	3.0	1.0	0.0	Wood	151	98.7	0.7	0.7	0.0

*Note:* Only 1.2% (70) students who were enrolled in Algebra 1 both semesters at the same school did not take the Semester 1 examination and the HSA.

Table A3  
2005–2006 Algebra 1 Semester 1 Examination and HSA Performance of Students in the  
Class of 2009 (Grade 9) Who Were Enrolled in Algebra 1A Semester 1 and Algebra 1B Semester 2 at the Same  
School and Took Both Tests by High School

High School	<i>N</i> Took S1 Exam and HSA	% Passed S1 Exam and HSA	% Passed S1 Exam Only	% Passed HSA Only	% Failed S1 Exam and HSA
All <sup>a</sup>	3680	57.1	6.7	16.7	19.6
B-CC	88	54.5	8.0	17.0	20.5
Blair	135	67.4	7.4	17.8	7.4
Blake	186	59.7	9.1	10.8	20.4
Churchill	109	78.9	4.6	13.8	2.8
Damascus	194	59.3	6.2	25.3	9.3
Einstein	149	35.6	2.7	17.4	44.3
Gaithersburg	135	56.3	8.1	18.5	17.0
Kennedy	124	72.6	9.7	8.9	8.9
Magruder	161	64.0	7.5	18.0	10.6
Northwest	206	65.0	5.8	13.1	16.0
Northwood	138	20.3	7.2	34.1	38.4
Paint Branch	176	45.5	9.7	15.3	29.5
Poolesville	50	64.0	8.0	20.0	8.0
Quince Orchard	132	58.3	5.3	19.7	16.7
Richard Montgomery	133	53.4	9.0	15.8	21.8
Rockville	94	67.0	7.4	12.8	12.8
Seneca Valley	147	57.8	7.5	20.4	14.3
Sherwood	253	71.9	7.1	7.5	13.4
Springbrook	199	39.2	4.0	17.1	39.7
Walter Johnson	164	59.1	3.7	17.7	19.5
Watkins Mill	257	35.8	8.9	23.3	31.9
Wheaton	161	50.9	3.1	24.8	21.1
Whitman	141	83.0	5.7	5.7	5.7
Wootton	133	82.7	3.8	6.8	6.8
Special Schools	15	6.7	13.3	0.0	80.0

<sup>a</sup> Includes special schools

*Note:* 12.2% (509) high school students who were enrolled in Algebra 1A and Algebra 1B Semesters 1 and 2, respectively, at the same school did not take both the Semester 1 examination and the HSA.

Table A4  
2005–2006 Algebra 1 Enrollment Patterns of Students in the Classes of 2009 or Later (Grades 6 to 9)  
Who Attended the Same School Semesters 1 and 2 by Demographic Group and School Level

Demographic Group	Middle School				Grade 9 High School <sup>a</sup>			
	Semester 1 <i>N</i> Took Algebra 1A	<i>N</i> Took Algebra 1B	Semester 2 <i>N</i> Repeated Algebra 1A	% Repeated Algebra 1A	Semester 1 <i>N</i> Took Algebra 1A	<i>N</i> Took Algebra 1B	Semester 2 <i>N</i> Repeated Algebra 1A <sup>b</sup>	% Repeated Algebra 1A
All MCPS	5944	5944	0	0.0	4676	4185	491	10.5
Male	3103	3103	0	0.0	2408	2115	293	12.2
Female	2841	2841	0	0.0	2268	2070	198	8.7
African American	796	796	0	0.0	1443	1242	201	13.9
Male	372	372	0	0.0	737	621	116	15.7
Female	424	424	0	0.0	706	621	85	12.0
Asian American	1246	1246	0	0.0	399	375	24	6.0
Male	661	661	0	0.0	216	198	18	8.3
Female	585	585	0	0.0	183	177	6	3.3
Hispanic	649	649	0	0.0	1238	1039	199	16.1
Male	318	318	0	0.0	648	531	117	18.1
Female	331	331	0	0.0	590	508	82	13.9
White	3238	3238	0	0.0	1583	1517	66	4.2
Male	1744	1744	0	0.0	803	761	42	5.2
Female	1494	1494	0	0.0	780	756	24	3.1
FARMS	667	667	0	0.0	1318	1098	220	16.7
Special Education	194	194	0	0.0	691	595	96	13.9
ELL	115	115	0	0.0	344	317	27	7.8

<sup>a</sup> Includes special schools.

*Note:* Data for American Indian students are included with all students but are not reported separately.

Table A5  
2005–2006 Semester 1 Algebra 1 Enrollment Patterns of Students in the Classes of 2009 (Grade 9)  
Who Attended the Same School Semesters 1 and 2 by High School

High School	Semester 1	Semester 2		
	<i>N</i> Took Algebra 1A	<i>N</i> Took Algebra 1B	<i>N</i> Repeated Algebra 1A	% Repeated Algebra 1A
All	4682	4189	493	10.5
B-CC	157	146	11	7.0
Blair	290	240	50	17.2
Blake	208	203	5	2.4
Churchill	122	122	0	0.0
Damascus	232	232	0	0.0
Einstein	197	159	38	19.3
Gaithersburg	202	151	51	25.2
Kennedy	172	127	45	26.2
Magruder	217	171	46	21.2
Northwest	266	242	24	9.0
Northwood	173	158	15	8.7
Paint Branch	224	199	25	11.2
Poolesville	61	54	7	11.5
Quince Orchard	178	142	36	20.2
Richard Montgomery	164	141	23	14.0
Rockville	110	101	9	8.2
Seneca Valley	173	164	9	5.2
Sherwood	273	273	0	0.0
Springbrook	244	230	14	5.7
Walter Johnson	171	171	0	0.0
Watkins Mill	313	271	42	13.4
Wheaton	225	182	43	19.1
Whitman	144	144	0	0.0
Wootton	138	138	0	0.0
Special Schools	28	28	0	0.0

Table A6  
2005–2006 Algebra 1 Test Taking Patterns of Students in the Classes of 2009 or Later (Grades 6 to 9) Who Were  
Enrolled in Algebra 1A Semester 1 and Algebra 1B Semester 2 at the Same School  
by Demographic Group and School Level

Demographic Group	Middle School					Grade 9 High School <sup>a</sup>				
	<i>N</i> Took Algebra 1A and 1B	<i>N</i> Took Semester 1 Exam	<i>N</i> Took Algebra 1A HSA	<i>N</i> Took Both Tests	% Took Both Tests	<i>N</i> Took Algebra 1A and 1B	<i>N</i> Took Semester 1 Exam	<i>N</i> Took Algebra 1A HSA	<i>N</i> Took Both Tests	% Took Both Tests
All MCPS	5944	5922	5896	5874	98.8	4189	4067	3787	3680	87.8
Male	3103	3093	3078	3068	98.9	2118	2060	1909	1857	87.7
Female	2841	2829	2818	2806	98.8	2071	2007	1878	1823	88.0
African American	796	793	789	786	98.7	1243	1193	1136	1090	87.7
Male	1246	1242	1241	1237	99.3	375	365	353	343	91.5
Female	649	647	644	642	98.9	1039	995	924	886	85.3
Asian American	3238	3225	3207	3194	98.6	1520	1502	1363	1350	88.8
Male										
Female	667	663	662	658	98.7	1099	1038	986	933	84.9
Hispanic	194	192	193	191	98.5	595	569	541	521	87.6
Male	115	114	115	114	99.1	317	303	306	292	92.1
Female	5944	5922	5896	5874	98.8	4189	4067	3787	3680	87.8
White										
Male	3103	3093	3078	3068	98.9	2118	2060	1909	1857	87.7
Female	2841	2829	2818	2806	98.8	2071	2007	1878	1823	88.0
FARMS	796	793	789	786	98.7	1243	1193	1136	1090	87.7
Special Education	1246	1242	1241	1237	99.3	375	365	353	343	91.5
ELL	649	647	644	642	98.9	1039	995	924	886	85.3

<sup>a</sup> Includes special schools.

Note: Data for American Indian students are included with all students but are not reported separately.



Table A7  
 2005–2006 Algebra 1 Exam and HSA Test Taking Patterns of Students in the Class of 2009 (Grade 9)  
 Who Were Enrolled in Algebra 1A Semester 1 and Algebra 1B Semester 2 and  
 Attended the Same School Semesters 1 and 2 by High School

High School	<i>N</i> Took Algebra 1A and Algebra 1B	<i>N</i> Took Algebra 1A Semester 1 Exam	<i>N</i> Took Algebra 1A HSA	<i>N</i> Took Algebra 1A Semester 1 Exam and HSA	% Took Algebra 1A Semester 1 Exam and HSA
All	4189	4067	3787	3680	87.8
B-CC	146	145	88	88	60.3
Blair	240	148	224	135	56.3
Blake	203	203	186	186	91.6
Churchill	122	122	109	109	89.3
Damascus	232	230	195	194	83.6
Einstein	159	155	152	149	93.7
Gaithersburg	151	150	136	135	89.4
Kennedy	127	127	124	124	97.6
Magruder	171	171	161	161	94.2
Northwest	242	240	207	206	85.1
Northwood	158	157	138	138	87.3
Paint Branch	199	199	176	176	88.4
Poolesville	54	53	51	50	92.6
Quince Orchard	142	141	133	132	93.0
Richard Montgomery	141	140	133	133	94.3
Rockville	101	99	95	94	93.1
Seneca Valley	164	163	147	147	89.6
Sherwood	273	272	254	253	92.7
Springbrook	230	227	201	199	86.5
Walter Johnson	171	168	166	164	95.9
Watkins Mill	271	271	257	257	94.8
Wheaton	182	182	161	161	88.5
Whitman	144	143	142	141	97.9
Wootton	138	137	133	133	96.4
Special Schools	28	24	18	15	53.6