

# **What Factors Relate to Student Performance in Arkansas College Gateway Courses?**

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by

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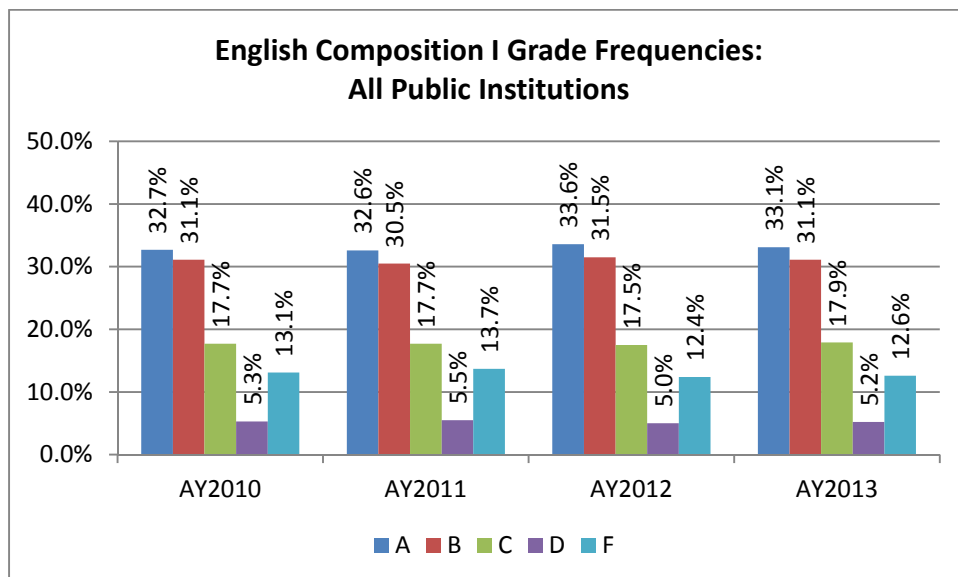
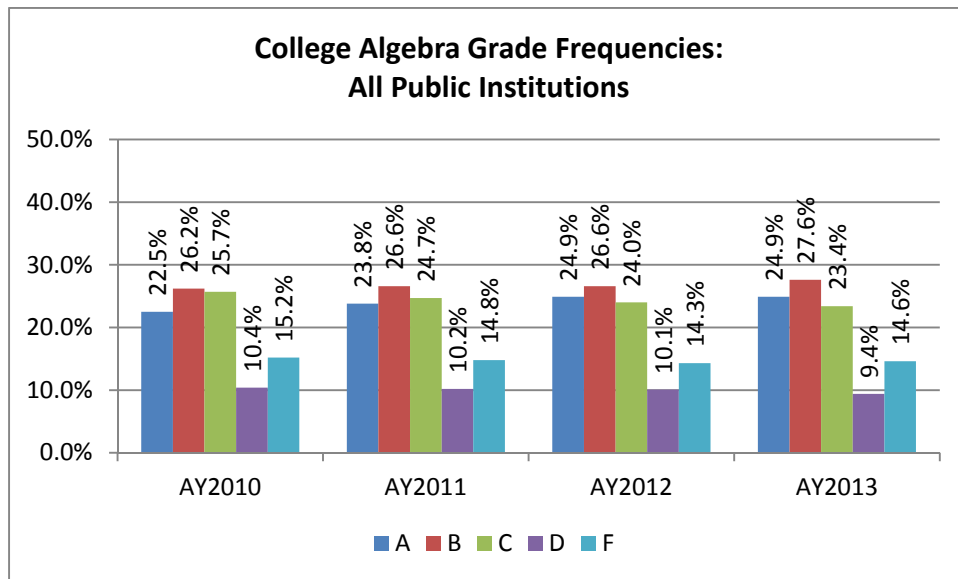
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## What Factors Relate to Student Performance in Arkansas College Gateway Courses?

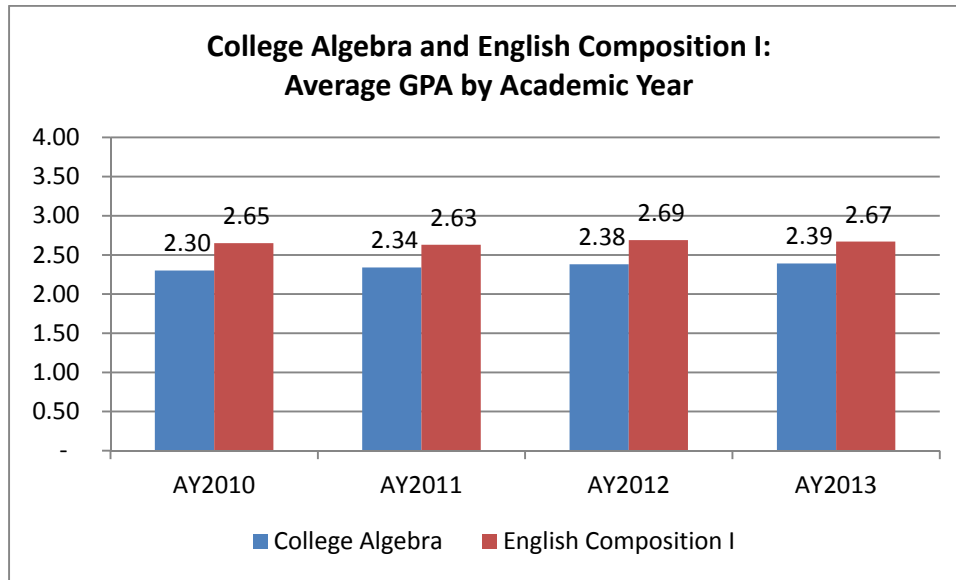
In higher education in the state of Arkansas, two courses are considered to be gateway courses to obtaining a college degree – College Algebra and English Composition I. While students may obtain Certificates of Proficiency and Technical Certificates without taking these courses, few, if any, can earn an Associate’s or Bachelor’s degree without passing these courses. This situation may change, however, based on changes in academic policy.

In this study, student performance is tracked for these two courses for Academic Years 2010, 2011, 2012, and 2013. Students enrolled in these courses at Arkansas’ public institutions were included and only those grades of A, B, C, D, and F were considered. The grade frequencies for such courses over the four academic years are as follows.



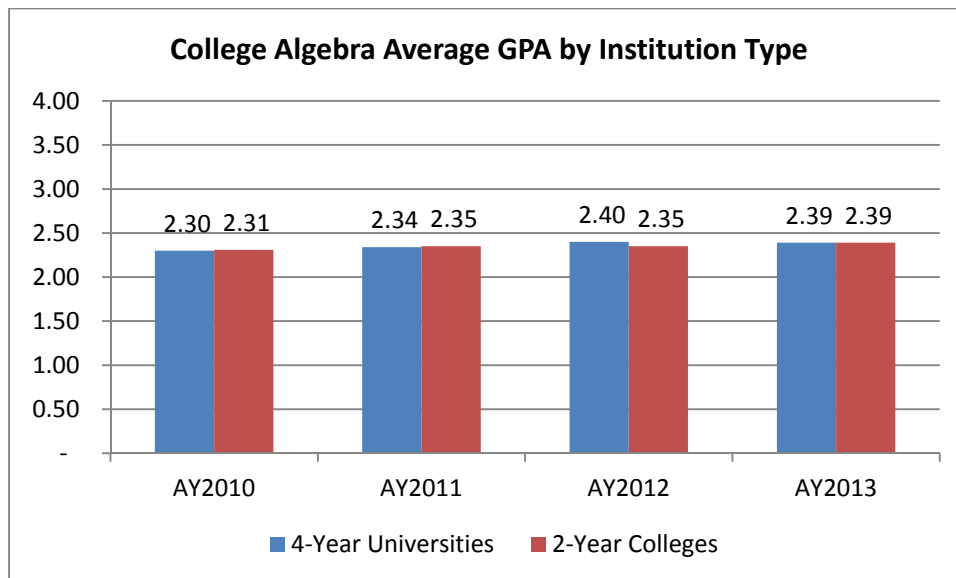
The table and graph below provides the average GPA's for each course and academic year.

All Students	AY2010	AY2011	AY2012	AY2013
College Algebra	2.30	2.34	2.38	2.39
English Composition I	2.65	2.63	2.69	2.67

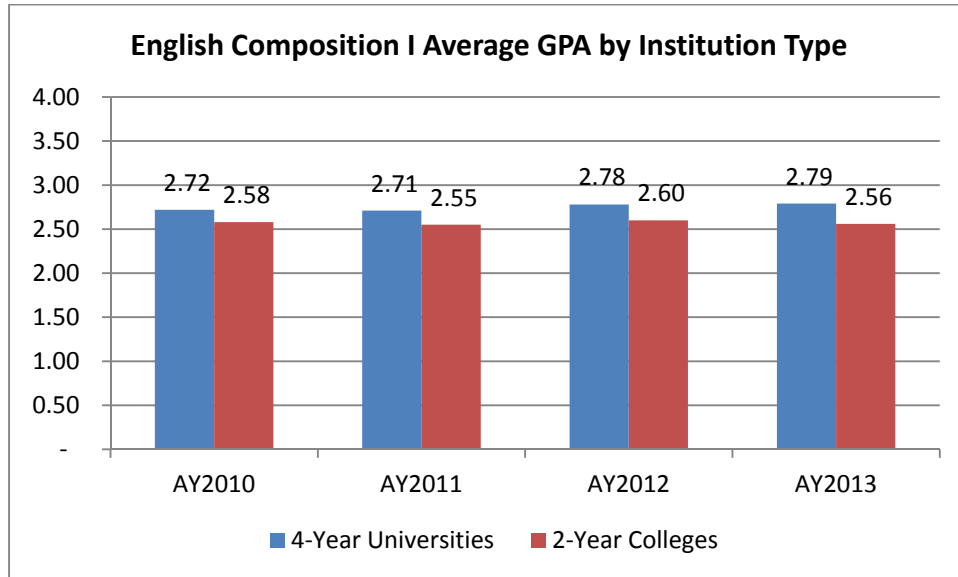


Comparing the two courses, students enrolled in English Composition I earn higher grades than students enrolled in College Algebra.

For College Algebra, there is very little difference between grades earned at 4-Year Universities and 2-Year Colleges.



For English Composition I, students at 4-Year Universities earn slightly better grades than students at 2-Year Colleges.



But what factors can influence a student’s earned grade in these courses? The Arkansas Department of Higher Education (ADHE) maintains the Student Information System Data Base (SISDB). This database includes information that can be used to track gateway course performance. Such factors reviewed in this study include the student’s high school GPA and placement exam scores consisting of ACT scores, SAT scores, Asset scores, and Compass scores.

### Factors Relating to College Algebra

Cutoff scores for mathematics placement tests during this time period were as follows. Cutoff scores are subject to change via Arkansas Higher Education Coordinating Board (AHECB) policy.

Math Test Type	Math Cutoff Score <sup>1</sup>
ACT	19
SAT	460
Asset	39
Compass	41

<sup>1</sup> Cutoff Scores are the required score on the placement exam that a first-time entering student must achieve to be placed in college level courses (College Algebra and English Composition I).

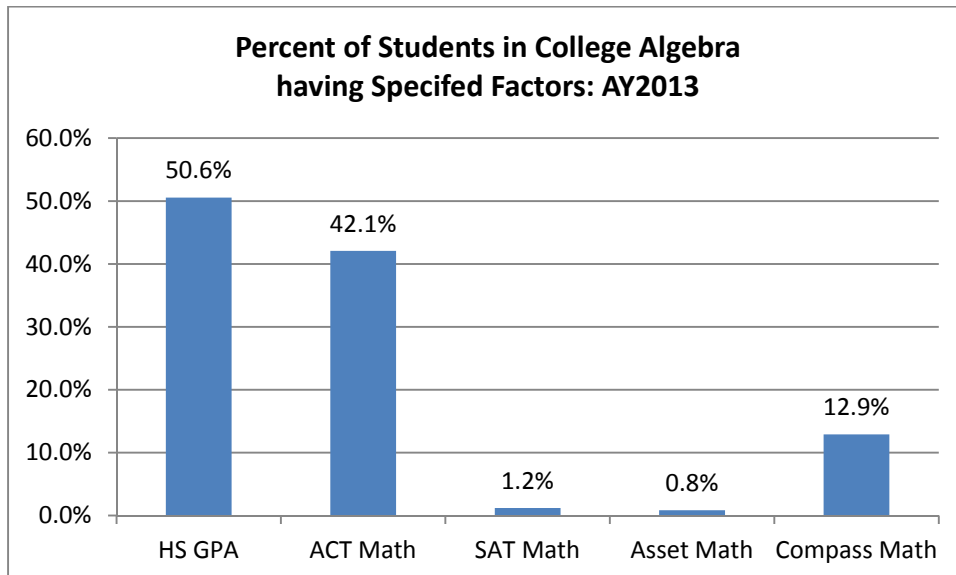
The following table provides a summary of the data regarding the factors mentioned above for College Algebra.

All Public Institutions		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	18,395	19,762	19,387	19,670
	Mean	2.30	2.34	2.38	2.39
HS GPA	N	9,293	10,185	10,331	9,945
	Mean	3.11	3.10	3.08	3.01
ACT Math	N	8,471	8,804	8,824	8,277
	Mean	20.77	20.99	20.99	20.94
SAT Math	N	177	221	204	239
	Mean	507.23	526.24	530.91	526.45
Asset Math	N	426	288	213	166
	Mean	38.02	36.95	40.50	37.68
Compass Math	N	1,989	2,422	2,352	2,541
	Mean	37.33	37.49	37.59	36.12

N = total number of students having this factor, i.e., grade, etc.

From the above table:

- Earned grades in College Algebra have been fairly consistent showing an increase over time.
- High school GPA's of students enrolled in College Algebra have also been consistent but showing a decline over time.
- ACT Math scores for students enrolled in College Algebra have been consistently around 21.
- SAT Math scores for students enrolled in College Algebra have been consistent.
- Asset Math scores for students enrolled in College Algebra have been consistently in the 37-40 range.
- Compass Math scores for students enrolled in College Algebra have been consistently in the 36-37 range.



The above chart shows that a large portion of the students enrolled in College Algebra have high school GPA's and ACT Math scores in the SISDB. SAT Math and Asset Math have the fewest placement scores available.

## Pearson's r and College Algebra

Pearson's r correlation statistics were calculated for all students earning grades of A, B, C, D, and F in College Algebra against the five factors referenced above. The following table summarizes the results. The code of A indicates that the correlation was significant at the .01 level and a code of B indicates that the correlation was significant at the .05 level.

Summary of College Algebra Grades Correlated with Other Factors using Pearson's r Correlations: AY2010-AY2013						
All Students						
High School GPA	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	A	4	0
4-Year Universities	A	A	A	A	4	0
All Public Institutions	A	A	A	A	4	0
ACT Math Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	A	4	0
4-Year Universities	A	A	A	A	4	0
All Public Institutions	A	A	A	A	4	0
SAT Math Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges			B		0	1
4-Year Universities	A	A	A	A	4	0
All Public Institutions	A	A	A	A	4	0
Asset Math Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges					0	0
4-Year Universities	B				0	1
All Public Institutions					0	0
Compass Math Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A		3	0
4-Year Universities	A	A	A	B	3	1
All Public Institutions	A	A	A	A	4	0

1. From the above table, the student's high school GPA and ACT Math score were clearly the factors that had the most significant correlations with the College Algebra grade. Each of these factors was significant at the .01 level each academic year for both the 2-Year Colleges, 4-Year Universities, and the Total.
2. Compass Math scores were significant at the .01 level three times for 2-Year Colleges and 4-Year Universities and all four academic years for the Total. In addition, it was significant at the .05 level one time at the 4-Year Universities.
3. SAT Math scores were significant at the .01 level for 4-Year Universities and the Total for each academic year, but were only significant during one academic year at the .05 level at the 2-Year Colleges.
4. The Asset Math score was never significant at the .01 level but was significant at the .05 level for one academic year at the 4-Year Universities.

In reviewing the Pearson's r correlation for significance at the .01 level only, please see the following table.

College Algebra Correlations at the .01 Level Only					
Factor	Institution Type	AY2010	AY2011	AY2012	AY2013
		Corr.	Corr.	Corr.	Corr.
HS GPA	2-Year Colleges	0.295	0.290	0.279	0.074
	4-Year Universities	0.437	0.464	0.366	0.390
	All Public Institutions	0.389	0.405	0.345	0.233
ACT Math	2-Year Colleges	0.154	0.134	0.173	0.070
	4-Year Universities	0.351	0.347	0.310	0.314
	All Public Institutions	0.294	0.295	0.278	0.246
SAT Math	2-Year Colleges				
	4-Year Universities	0.352	0.284	0.383	0.381
	All Public Institutions	0.335	0.290	0.393	0.334
Compass Math	2-Year Colleges	0.097	0.075	0.096	
	4-Year Universities	0.188	0.283	0.169	
	All Public Institutions	0.116	0.133	0.135	0.061

NOTE: Numbers in RED indicate a negative correlation.

5. High school GPA and ACT Math scores are the only factors that are significant at the .01 level for 2-Year Colleges, 4-Year Universities, and the Total for each academic year. Therefore, it can reasonably be said that the most important factors that are reported in the state's SISDB system that relate to grade performance in College Algebra are high school GPA and ACT Math scores. It can also be argued that since the correlation for high school GPA is higher than ACT Math scores for three of the four academic years, that high school GPA may be the most related factor.
6. SAT Math scores also have higher correlations than ACT Math scores for both 4-Year Universities and the Total for three of the four years. But SAT Math scores are not significant at the .01 level for 2-Year Colleges. This indicates that the SAT Math scores are a good indicator for 4-Year Universities but not for 2-Year Colleges.
7. Compass Math scores are also significant at the .01 level for three academic years for the 2-Year Colleges and 4-Year Universities and for all four academic years for the Total. However, the correlations are much lower than that for high school GPA, ACT Math scores, and SAT Math scores.
8. Asset Math scores are not significant at the .01 level.

## Factors Relating to English Composition I

Cutoff scores for placement tests during this time period were as follows.

English Test Type	English Cutoff Score
ACT	19
SAT	470
Asset	45
Compass	75

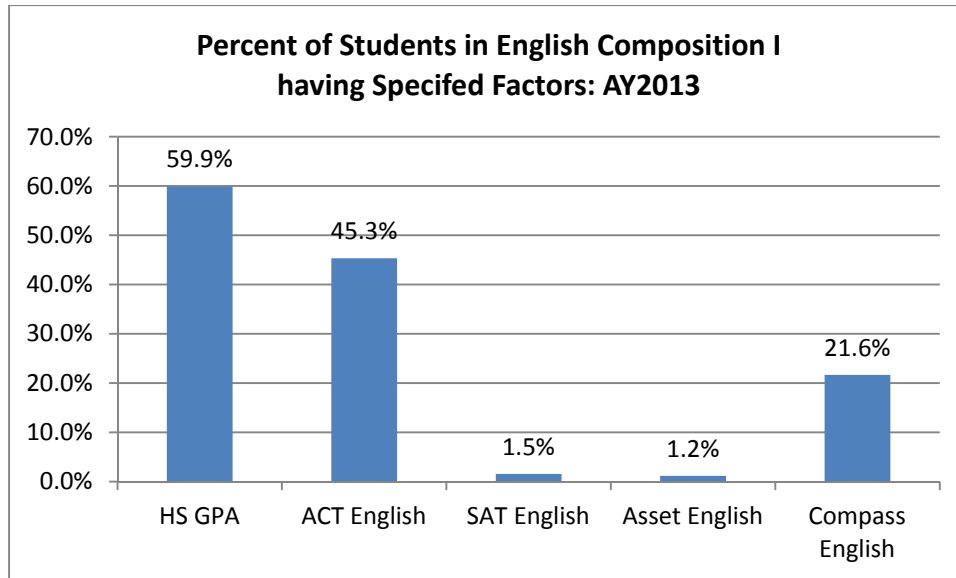
The following table provides a summary of the data regarding the factors mentioned above for English Composition I.

All Public Institutions		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	23,995	25,878	24,786	26,527
	Mean	2.65	2.63	2.69	2.67
HS GPA	N	14,111	15,619	15,202	15,892
	Mean	3.00	2.99	2.98	2.90
ACT English	N	11,266	11,919	11,761	12,024
	Mean	21.22	21.21	21.41	20.97
SAT English	N	275	313	373	410
	Mean	492.67	507.32	497.81	501.48
Asset English	N	727	518	397	308
	Mean	40.70	40.76	40.12	38.97
Compass English	N	4,742	5,722	5,142	5,742
	Mean	73.43	72.00	72.35	70.55
N = total number of students having this factor, i.e., grade, etc.					

From the above table:

- Earned grades in English Composition I have been fairly consistent over the four academic years reviewed.
- High school GPA's of students enrolled in English Composition I have also been consistent but showing a decline over time.
- ACT English scores for students enrolled in English Composition I have been consistently around 21.
- SAT English scores for students enrolled in English Composition I have been consistent.
- Asset Math scores for students enrolled in English Composition I have been consistently in the 39-41 range.
- Compass English scores for students enrolled in English Composition I have been consistently in the 70-73 range.





The above column chart shows that a large portion of the students enrolled in English Composition I have high school GPA's and ACT Math scores in the SISDB. SAT Math and Asset Math are the fewest placement scores available. This is very similar to the comparisons for College Algebra, but the high school GPA's and Compass English scores are more prevalent.

#### **Pearson's r and English Composition I**

Pearson's r correlation statistics were calculated for all students earning grades of A, B, C, D, and F in English Composition I against the five factors referenced above. The following table summarizes the results. The code of A indicates that the correlation was significant at the .01 level and a code of B indicates that the correlation was significant at the .05 level. Codes in **RED** indicate a negative correlation, meaning that as one factor goes up, the other factor goes down.

**Summary of English Composition I Grades Correlated  
with Other Factors using Pearson's r Correlations: AY2010-AY2013**

All Students						
High School GPA	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	A	4	0
4-Year Universities	A	A	A	A	4	0
All Public Institutions	A	A	A	A	4	0
ACT English Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	A	4	0
4-Year Universities	A	A	A	A	4	0
All Public Institutions	A	A	A	A	4	0
SAT English Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges			A		1	0
4-Year Universities		A			1	0
All Public Institutions		A			1	0
Asset English Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges		A	A	B	2	1
4-Year Universities	A				1	0
All Public Institutions	B	A	A	B	2	2
Compass English Score	AY2010	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	A	4	0
4-Year Universities			A	A	2	0
All Public Institutions	A	A	B	A	3	1

1. From the above table, the student's high school GPA and ACT English score were clearly the factors that had the most significant correlations with the English Composition I grade. These factors were significant at the .01 level each academic year for both the 2-Year Colleges, 4-Year Universities, and All Public Institutions.
2. Compass English scores were significant at the .01 level nine times: four times for the 2-Year Colleges; twice for the 4-Year Universities; and three times for the Total. However, the two correlations for the 4-Year Universities were negative correlations. In addition, it was significant at the .05 level one time for All Public Institutions.
3. The Asset English scores were significant at the .01 level five times (twice for 2-Year Colleges, once for 4-Year Universities, and twice for the total) and three times at the .05 significance level (once for 2-Year Colleges and twice for All Public Institutions).
4. SAT English scores were significant at the .01 level one time each for 2-Year Colleges, 4-Year Universities and All Public Institutions.

In reviewing the Pearson's r correlation for significance at the .01 level only, please see the following table.

English Composition I Correlations at the .01 Level Only					
Factor	Institution Type	AY2010	AY2011	AY2012	AY2013
		Corr.	Corr.	Corr.	Corr.
HS GPA	2-Year Colleges	0.289	0.266	0.246	0.109
	4-Year Universities	0.382	0.385	0.322	0.361
	All Public Institutions	0.352	0.346	0.307	0.249
ACT English	2-Year Colleges	0.151	0.137	0.134	0.125
	4-Year Universities	0.276	0.295	0.246	0.276
	All Public Institutions	0.244	0.256	0.221	0.243
SAT English	2-Year Colleges			0.670	
	4-Year Universities		0.224		
	All Public Institutions		0.223		
Asset English	2-Year Colleges		0.145	0.179	
	4-Year Universities	0.174			
	All Public Institutions		0.143	0.173	
Compass English	2-Year Colleges	0.087	0.099	0.061	0.119
	4-Year Universities			(0.077)	(0.089)
	All Public Institutions	0.069	0.078		0.082

NOTE: Numbers in RED indicate a negative correlation.

5. High school GPA and ACT Math scores are the only factors that are significant at the .01 level for 2-Year Colleges, 4-Year Universities, and All Public Institutions for each academic year. Therefore, it can reasonably be said that the most important factors that are reported in the state's SISDB system that relate to grade performance in English Composition I are high school GPA and ACT English scores. It can also be argued that since the correlation for high school GPA is higher than ACT English scores for all four academic years, that high school GPA may be the most related factor.
6. SAT English scores were significant at the .01 level for one year for 2-Year Colleges, 4-Year Colleges, and All Public Institutions.
7. Asset English scores were significant at the .01 level for two years at 2-Year Colleges, one year at 4-Year Universities, and 2 years for All Public Institutions.
8. Compass English scores were significant at the .01 level for all four years for 2-Year Colleges. For 4-Year Universities, Compass English score were significant at the .01 level for two years, but these correlations were negative indicating that as one factor goes up the other factor does down. Compass English scores were significant at the .01 level for three years for All Public Institutions.

### Remediated Students

The above review of students enrolled in College Algebra and English Composition I included a substantial number of students that were remediated, i.e., had taken remedial courses before entering the college level course. The only exception is Academic Year 2013 due to the academic policy change allowing for simultaneous enrollment in the remedial and college level course.

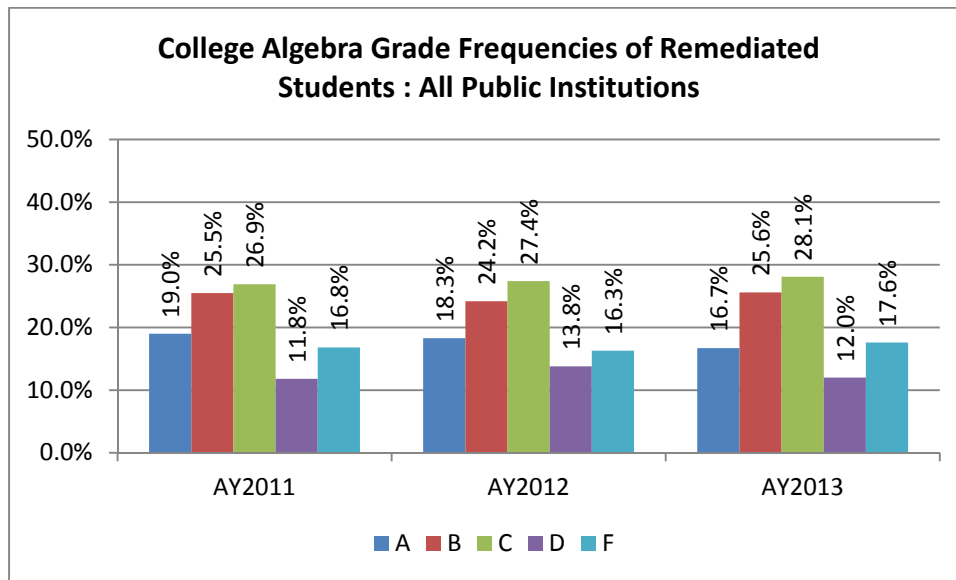
This section of the report separates out such remediated students for a similar analysis performed previously for all students earning grades of A-F in College Algebra and English Composition I. This remediated student section is a subset of the College Algebra and English Composition I groups of students. The dataset includes an identification of whether or not the student was ever remediated in

the same subject area, either during the same or prior academic year. The non-remediated students were then removed from the final remediated student dataset.

It should be noted that this study used the remedial CIP Code of 32.0104 to identify remediated students in math, whereas it used the remedial CIP Code of 32.0108 to identify remediated students in English. However, the 32.0108 CIP Code includes the subjects of both English and reading. So the English students could have been remediated in English, reading, or both subjects.

AY2010 – Academic Year 2010 appears to be a data anomaly as only 48 students were reported as having grades in remedial level 3 math courses and only 254 students were reported as having grades in remedial level 3 English courses. These numbers appear very low. Since this was the first year that remedial levels 1-3 were identified, this will be considered a data anomaly and will be excluded from the discussion on remedial students.<sup>2</sup>

The below graph indicates the grades (A-F) that remediated students earned in College Algebra for AY2011 – AY2013.



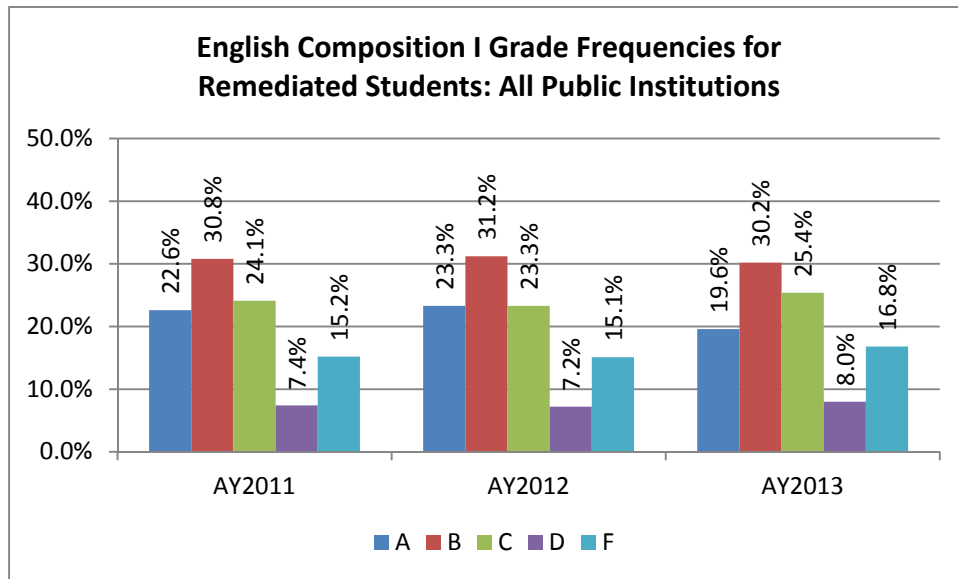
In following table provides a comparison of remediated students and all students for GPA in College Algebra.

Avg. Grade or GPA of Students in College Algebra			
Student Type	AY2011	AY2012	AY2013
Remediated Students	2.18	2.14	2.12
All Students	2.34	2.38	2.39

Generally, the earned GPA of remediated students is significantly below that of all students in College Algebra. This is an expected situation.

The below graph indicates the grades (A-F) that remediated students earned in English Composition I.

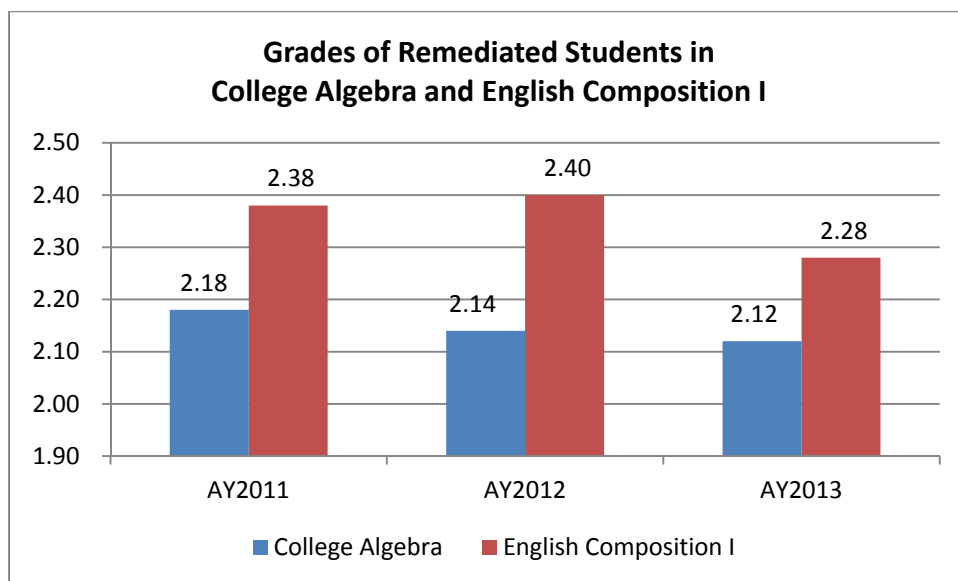
<sup>2</sup> Remedial students were identified using the Remedial Level code of 3. The use of remedial levels began in AY2010. When a new field is required in the SISDB, the data may tend to be unreliable or incomplete for the first year of its collection. Therefore, such data anomalies should generally be ignored.



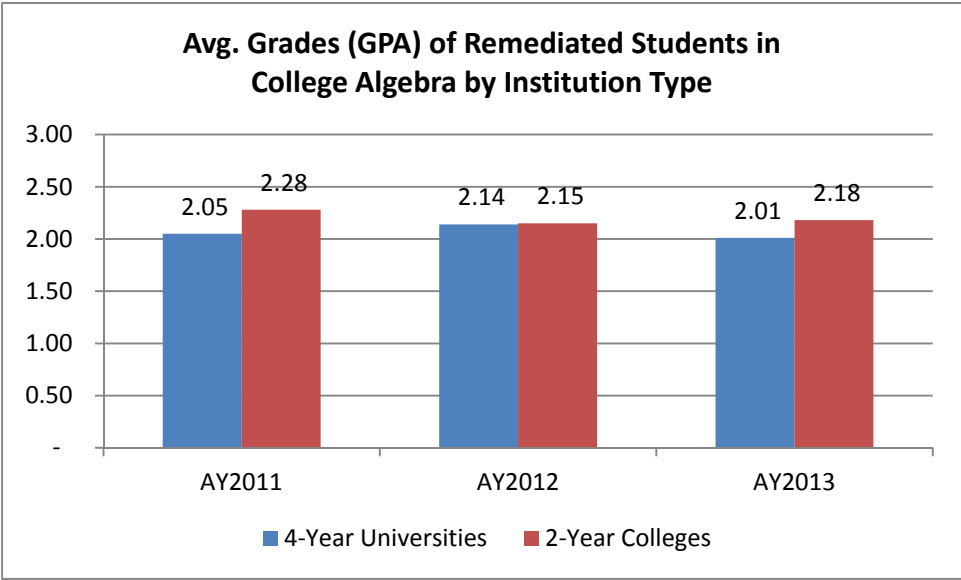
Avg. Grade or GPA of Students in English Composition I			
Student Type	AY2011	AY2012	AY2013
Remediated Students	2.38	2.40	2.28
All Students	2.63	2.69	2.67

Again, the GPA of remediated students is significantly less than that of all students. This is also an expected situation.

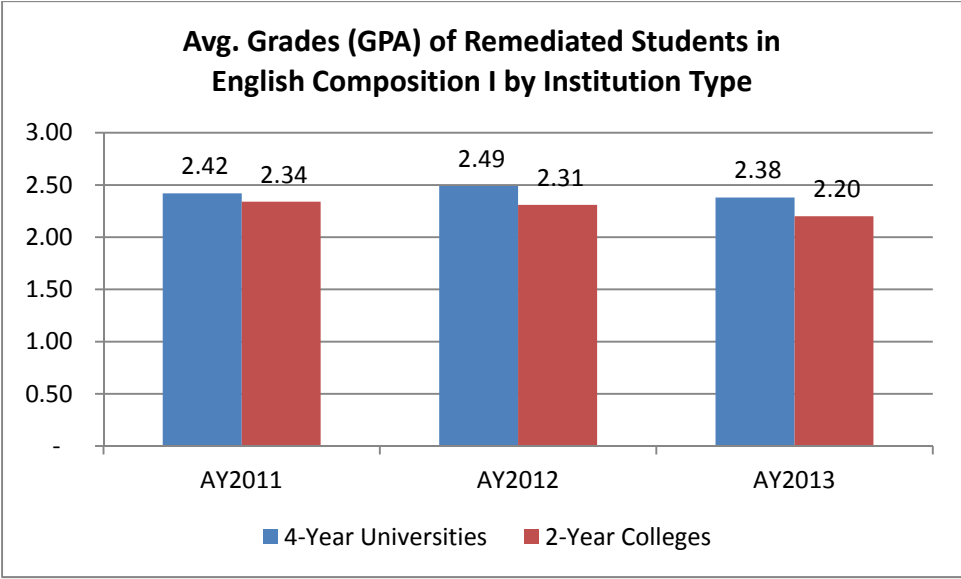
The following graph provides the average grades (or GPA) of remediated students in College Algebra and English Composition I.



There are small differences in the earned grade for remediated students in College Algebra between the 2-Year Colleges and 4-Year Universities.



There are small differences in the earned grade for remediated students in English Composition I between the 2-Year Colleges and 4-Year Universities.



## Factors Relating to Remediated Students in College Algebra

The factors used above relating to student performance in College Algebra and English Composition I will also be used for remediated students. These are found in the SISDB and include the student's high school GPA and placement exam scores consisting of ACT scores, SAT scores, Asset scores, and Compass scores. However, for remediated students, there is one additional factor that can be used – the grade that the remediated students earned in their remedial level 3 course. Therefore, the next sections on remediation students will include this additional factor.

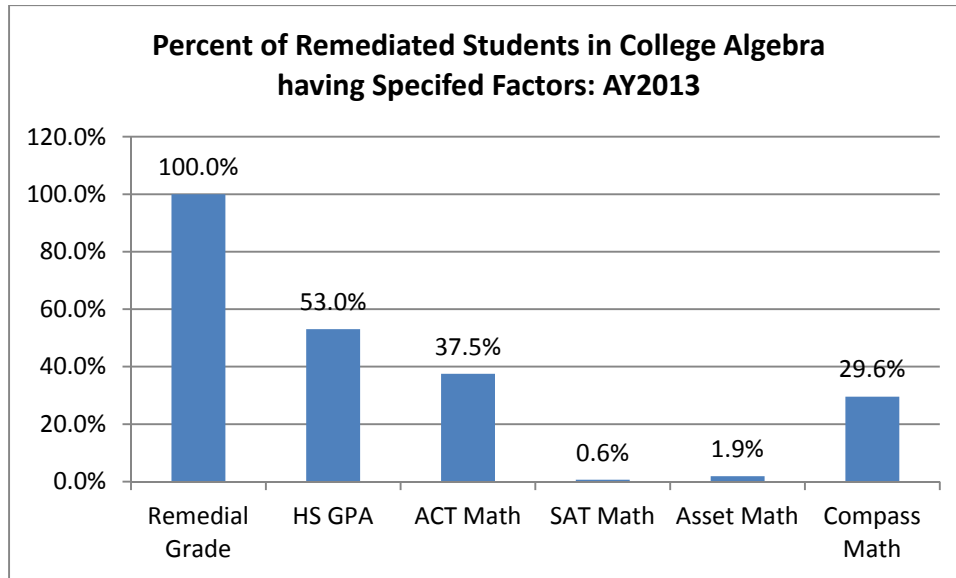
The following table provides a summary of the data regarding the factors mentioned above for remediated students enrolled in College Algebra.

Descriptive Statistics for Remediated Students Enrolled in College Algebra: AY2011-AY2013				
All Public Institutions		Remediated Students Only		
		AY2011	AY2012	AY2013
Grade	N	2,548	4,787	5,101
	Mean	2.18	2.14	2.12
Remedial Grade	N	2,548	4,787	5,101
	Mean	2.97	2.89	2.89
HS GPA	N	1,370	2,702	2,706
	Mean	2.90	2.86	2.78
ACT Math	N	1,010	1,967	1,914
	Mean	17.66	17.38	17.19
SAT Math	N	10	33	33
	Mean	485.00	435.45	432.79
Asset Math	N	69	105	96
	Mean	37.67	41.05	38.27
Compass Math	N	632	1,213	1,509
	Mean	32.41	33.20	30.52

N = total number of students having this factor, i.e., grade, etc.

From the above table:

- Grades for remediated students in College Algebra have been fairly consistent but are decreasing.
- The remedial course grades for remediated students in College Algebra have been fairly consistent.
- The high school GPA for remediated students in College Algebra is decreasing.
- ACT Math scores for remediated students in College Algebra are decreasing.
- SAT Math scores for remediated students in College Algebra have decreased since AY2011 but have been stable since then.
- Asset Math scores for remediated students in College Algebra have consistently ranged from 37-41.
- Compass Math scores for remediated students in College Algebra have consistently ranged from 30-33.



The above graph illustrates that all of the remediated students in College Algebra had a remedial course grade and most had high school GPA's. Significant portions also have ACT Math and Compass Math scores, but very few have SAT Math or Asset Math scores.

**Pearson's r and Spearman's rho for Remediated Students in College Algebra**

Pearson's r correlation statistics were calculated for all factors reported for remediated students in College Algebra. In addition, Spearman's rho was calculated for the factor of remedial course grade. The results are shown in the below table where the letter A indicates a correlation that was significant at the .01 level and the letter B indicates a correlation that was significant at the .05 level.



<b>Pearson's r Correlations for Remediated Students Only</b>					
<b>Remedial Course Grade</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	3	0
4-Year Universities	A	A	A	3	0
Total	A	A	A	3	0
<b>High School GPA</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	B	2	1
4-Year Universities	A	A	A	3	0
Total	A	A	A	3	0
<b>ACT Math Score</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges				0	0
4-Year Universities	A	A		2	0
Total	B	B	B	0	3
<b>SAT Math Score</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges		A		1	0
4-Year Universities				0	0
Total				0	0
<b>Asset Math Score</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges				0	0
4-Year Universities				0	0
Total				0	0
<b>Compass Math Score</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges				0	0
4-Year Universities		A		1	0
Total		B		0	1
<b>Spearman's rho Correlations for Remediated Students Only</b>					
<b>Remedial Course Grade</b>	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	3	0
4-Year Universities	A	A	A	3	0
Total	A	A	A	3	0

1. From the above table, the grade earned in College Algebra by remediated students as compared to the grade they earned in a remedial math course was significant at the .01 level for every institution type for every year. This was the case for both the Pearson's r and Spearman's rho correlations.
2. Following closely behind is the correlation between grades earned in College Algebra by remediated students as compared to their high school GPA. The correlation was significant at the .01 level eight times and significant at the .05 level once.
3. There were a total of five significant correlations involving the ACT Math score (two at the .01 level and three at the .05 level).
4. There were a total of two significant correlations involving the Compass Math score (one at the .01 level and one at the .05 level).
5. There was one significant correlation involving the SAT Math score (at the .01 level).
6. There were no significant correlations involving the Asset Math score.

The following table provides the correlations at the .01 level only.

College Algebra Correlations at the .01 Level Only							
Factor	Institution Type	AY2011		AY2012		AY2013	
		Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remedial Grade Only (Pearson's r)	2-Year Colleges	0.441	0.01	0.438	0.01	0.392	0.01
	4-Year Universities	0.457	0.01	0.383	0.01	0.385	0.01
	All Public Institutions	0.446	0.01	0.412	0.01	0.388	0.01
Remedial Grade Only (Spearman's rho)	2-Year Colleges	0.479	0.01	0.467	0.01	0.429	0.01
	4-Year Universities	0.473	0.01	0.395	0.01	0.393	0.01
	All Public Institutions	0.474	0.01	0.431	0.01	0.412	0.01
High School GPA	2-Year Colleges	0.216	0.01	0.108	0.01		
	4-Year Universities	0.212	0.01	0.101	0.01	0.090	0.01
	All Public Institutions	0.206	0.01	0.106	0.01	0.070	0.01
ACT Math	2-Year Colleges						
	4-Year Universities	0.123	0.01	0.072	0.01		
	All Public Institutions						
SAT Math	2-Year Colleges			1.000	0.01		
	4-Year Universities						
	All Public Institutions						
Asset Math	2-Year Colleges						
	4-Year Universities						
	All Public Institutions						
Compass Math	2-Year Colleges						
	4-Year Universities			0.168	0.01		
	All Public Institutions						

7. Remedial grade was the only factor that was significant at the .01 level for every year at each institution type. This was true for both correlation types – Person's r and Spearman's rho. In addition, the correlations were generally higher with the Pearson's r ranging from .383 to .457 and the Spearman's rho ranging from .393 to .479.
8. High school GPA was also quite significant as it was significant at the .01 level eight times out of nine possible. However, the range of correlations was substantially lower (.070 to .216) than remedial course grades.
9. ACT Math scores were significant at the .01 level two times at the 4-Year Universities.
10. SAT Math scores were significant at the .01 level once at the 4-Year Universities.
11. Compass Math scores were significant at the .01 level once at the 4-Year Universities.
12. Asset Math scores were not significant at the .01 level.

Therefore, the primary factor affecting remediated student performance in College Algebra courses is their performance in their remedial math course. A secondary factor is the student's high school GPA. The other factors were not consistently significant.

### Factors Relating to Remediated Students in English Composition I

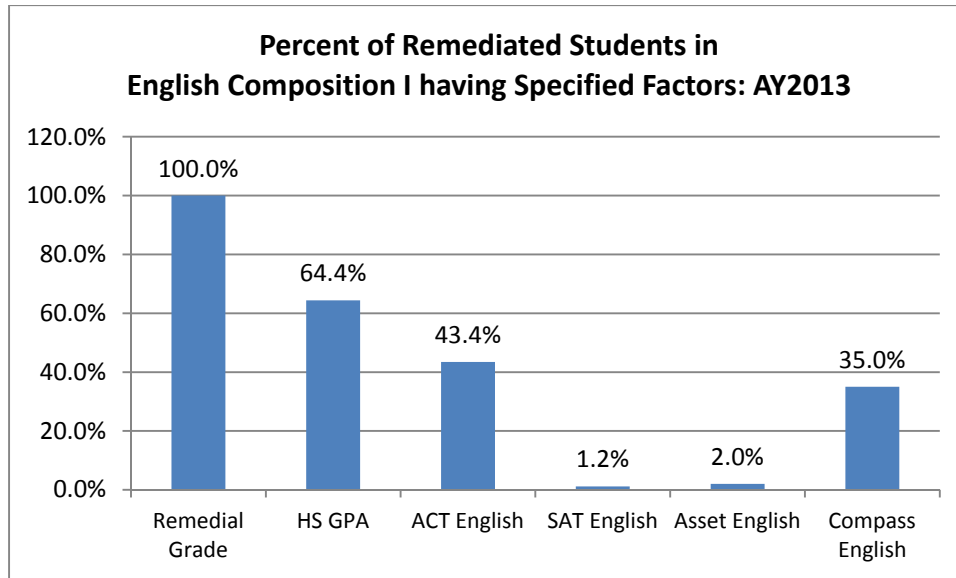
The factors used above relating to student performance in College Algebra and English Composition I will also be used for remediated students. These are found in the SISDB and include the student's high school GPA and placement exam scores consisting of ACT scores, SAT scores, Asset scores, and Compass scores. However, for remediated students, there is one additional factor that can be used – the grade that the remediated students earned in their remedial level 3 course. Therefore, this section on remediation students will include this additional factor.

The following table provides a summary of the data regarding the factors mentioned above for remediated students enrolled in English Composition I. Note that AY2010 has been removed due to the data anomaly mentioned above.

<b>Descriptive Statistics for Remediated Students Enrolled in English Composition I: AY2011-AY2013</b>				
<b>All Public Institutions</b>		<b>Remediated Students Only</b>		
		AY2011	AY2012	AY2013
Grade	N	3,675	4,741	5,494
	Mean	2.38	2.40	2.28
Remedial Grade	N	3,675	4,741	5,494
	Mean	2.87	2.93	2.81
HS GPA	N	2,549	3,255	3,539
	Mean	2.79	2.69	2.66
ACT English	N	1,653	1,996	2,387
	Mean	16.60	16.26	15.66
SAT English	N	26	68	64
	Mean	401.54	400.32	338.58
Asset English	N	78	112	112
	Mean	34.79	36.06	30.91
Compass English	N	1,216	1,675	1,925
	Mean	53.35	50.06	48.15
N = total number of students having this factor, i.e., grade, etc.				

From the above table:

- The earned grades for remediated students in English Composition I have been relatively consistent but show more variability than the corresponding grades for College Algebra. However, the English Composition I grades are higher than the College Algebra grades.
- The remedial course grades for remediated students have been relatively consistent.
- The high school GPA for remediated students has been decreasing.
- The ACT English scores have ranged from 15-17.
- The SAT English score experienced a substantial drop in AY2013 from consistent scoring the previous two years.
- The Asset English score experienced a substantial drop in AY2013 from consistent scoring the previous two years.
- The Compass English scores have been consistently declining.



The above graph illustrates that all remediated students in English Composition I had a remedial course grade and most had high school GPA's. Significant portions also have ACT English and Compass English scores, but very few have SAT English or Asset English scores.

**Pearson's r and Spearman's rho for Remediated Students in English Composition I**

Pearson's r correlation statistics were calculated for all factors reported for remediated students in English Composition I. In addition, Spearman's rho was calculated for the factor of remedial course grade. The results are shown in the below table where the letter A indicates a correlation that was significant at the .01 level and the letter B indicates a correlation that was significant at the .05 level. Letters in **RED** indicate a negative correlation.

Pearson's r Correlations for Remediated Students Only					
Remedial Course Grade	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	3	0
4-Year Universities	A	A	A	3	0
Total	A	A	A	3	0
High School GPA	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	3	0
4-Year Universities	A	A	A	3	0
Total	A	A	A	3	0
ACT English Score	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges				0	0
4-Year Universities	A	B	A	2	1
Total	A	B	A	2	1
SAT English Score	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges				0	0
4-Year Universities	B		B	0	2
Total	B		A	1	1
Asset English Score	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	B			0	1
4-Year Universities			B	0	1
Total				0	0
Compass English Score	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges				0	0
4-Year Universities	A	A		2	0
Total	B			0	1
Spearman's rho Correlations for Remediated Students Only					
Remedial Course Grade	AY2011	AY2012	AY2013	Total A's	Total B's
	Corr.	Corr.	Corr.		
2-Year Colleges	A	A	A	3	0
4-Year Universities	A	A	A	3	0
Total	A	A	A	3	0

1. From the above table, the grade earned in English Composition I by remediated students as compared to the grade they earned in a remedial English course was significant at the .01 level for every institution type and for every year. This was the case for both the Pearson's r and Spearman's rho correlations.
2. In addition, the correlation between grades earned in English Composition I by remediated students as compared their high school GPA was also significant at the .01 level for every institution type for every year.
3. There were a total of six significant correlations involving the ACT English score (four at the .01 level and two at the .05 level).
4. There were a total of four significant correlations involving the SAT English score (one at the .01 level and three at the .05 level).
5. There were a total of two significant correlations involving the Asset English score (two at the .05 level) with one of these correlations being negative.
6. There were a total of three significant correlations involving the Compass English score (two at the .01 level and one at the .05 level), but all of these correlations were negative.

The following table provides the correlations at the .01 level only.

Correlations at the .01 Level Only							
Factor	Institution Type	AY2011		AY2012		AY2013	
		Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remedial Grade Only (Pearson's r)	2-Year Colleges	0.399	0.01	0.370	0.01	0.409	0.01
	4-Year Universities	0.399	0.01	0.370	0.01	0.417	0.01
	All Public Institutions	0.399	0.01	0.368	0.01	0.413	0.01
Remedial Grade Only (Spearman's rho)	2-Year Colleges	0.385	0.01	0.362	0.01	0.382	0.01
	4-Year Universities	0.370	0.01	0.356	0.01	0.399	0.01
	All Public Institutions	0.377	0.01	0.358	0.01	0.388	0.01
HS GPA	2-Year Colleges	0.178	0.01	0.169	0.01	0.115	0.01
	4-Year Universities	0.219	0.01	0.145	0.01	0.167	0.01
	All Public Institutions	0.206	0.01	0.162	0.01	0.153	0.01
ACT English	2-Year Colleges						
	4-Year Universities	0.124	0.01			0.134	0.01
	All Public Institutions	0.064	0.01			0.080	0.01
SAT English	2-Year Colleges						
	4-Year Universities						
	All Public Institutions					0.321	0.01
Asset English	2-Year Colleges						
	4-Year Universities						
	All Public Institutions						
Compass English	2-Year Colleges						
	4-Year Universities	(0.163)	0.01	(0.153)	0.01		
	All Public Institutions						

7. Remedial grade was the only factor that was significant at the .01 level for every year at each institution type. This was true for both correlation types – Person’s r and Spearman’s rho. In addition, the correlations were generally higher with the Pearson’s r ranging from .368 to .417 and the Spearman’s rho ranging from .356 to .399.
8. High school GPA was also quite significant as it was significant at the .01 level nine times out of nine possible. However, the range of correlations was substantially lower (.115 to .219) than remedial course grades.
9. ACT Math scores were significant at the .01 level four times (twice for 4-Year Universities and twice for All Public Institutions).
10. SAT Math scores were significant at the .01 level only once at All Public Institutions.
11. Compass Math scores were significant at the .01 level twice at the 4-Year Universities, but these correlations were negative.
12. Asset Math scores were not significant at the .01 level.

Therefore, the primary factor affecting remediated student performance in English Composition I courses is their performance in their remedial course. A secondary factor is the student’s high school GPA. The other factors were not consistently significant.

## Summary

The following table summarizes all correlations at the .01 level for all students enrolled in College Algebra or English Composition I.

Factor	Institution Type	ALL STUDENTS and CORRELATIONS AT .01 LEVEL							
		College Algebra				English Composition I			
		AY2010	AY2011	AY2012	AY2013	AY2010	AY2011	AY2012	AY2013
HS GPA (Pearson's r)	2-Year Colleges	0.295	0.290	0.279	0.074	0.289	0.266	0.246	0.109
	4-Year Universities	0.437	0.464	0.366	0.390	0.382	0.385	0.322	0.361
	All Public Institutions	0.389	0.405	0.345	0.233	0.352	0.346	0.307	0.249
ACT Scores (Pearson's r)	2-Year Colleges	0.154	0.134	0.173	0.070	0.151	0.137	0.134	0.125
	4-Year Universities	0.351	0.347	0.310	0.314	0.276	0.295	0.246	0.276
	All Public Institutions	0.294	0.295	0.278	0.246	0.244	0.256	0.221	0.243
SAT Scores (Pearson's r)	2-Year Colleges							0.670	
	4-Year Universities	0.352	0.284	0.383	0.381		0.224		
	All Public Institutions	0.335	0.290	0.393	0.334		0.223		
Asset Scores (Pearson's r)	2-Year Colleges						0.145	0.179	
	4-Year Universities					0.174			
	All Public Institutions						0.143	0.173	
Compass Scores (Pearson's r)	2-Year Colleges	0.097	0.075	0.096		0.087	0.099	0.061	0.119
	4-Year Universities	0.188	0.283	0.169				(0.077)	(0.089)
	All Public Institutions	0.116	0.133	0.135	0.061	0.069	0.078		0.082

Two factors are significant at the .01 level with College Algebra and English Composition I for each year and for each institution type – these factors are high school GPA and ACT scores.

To summarize, the factors most significantly related to success in College Algebra or English Composition I are as follows:

Factor	Comments
1. High School GPA	This factor was significant for every year for both College Algebra and English Composition I. In comparing this factor to the others, it had the highest correlations of all factors.
2. ACT Scores	This factor was significant for every year for both College Algebra and English Composition I.
3. SAT Scores	This factor was strongly related to College Algebra at the 4-Year Universities, but not at the 2-Year Colleges. Its significance for English Composition I was negligible.
4. Asset Scores	This factor was not significant for College Algebra. For English Composition I, it was significant 5 times out of 12.
5. Compass Scores	This was frequently significant for College Algebra. But for English Composition I, it was significant for the 2-Year Colleges but it had negative correlations for the 4-Year Universities.

**Clearly, the best indicators of student success in both College Algebra and English Composition I are high school GPAs followed closely by ACT scores.**

## Summary for Remediated Students

The following table summarizes all correlations at the .01 level for remediated students enrolled in College Algebra or English Composition I.

Factor	Institution Type	REMIEDIATED STUDENTS ONLY and CORRELATIONS AT .01 LEVEL					
		College Algebra			English Composition I		
		AY2011	AY2012	AY2013	AY2011	AY2012	AY2013
Remedial Grade (Pearson's r)	2-Year Colleges	0.441	0.438	0.392	0.399	0.370	0.409
	4-Year Universities	0.457	0.383	0.385	0.399	0.370	0.417
	All Public Institutions	0.446	0.412	0.388	0.399	0.368	0.413
Remedial Grade (Spearman's rho)	2-Year Colleges	0.479	0.467	0.429	0.385	0.362	0.382
	4-Year Universities	0.473	0.395	0.393	0.370	0.356	0.399
	All Public Institutions	0.474	0.431	0.412	0.377	0.358	0.388
HS GPA (Pearson's r)	2-Year Colleges	0.216	0.108		0.178	0.169	0.115
	4-Year Universities	0.212	0.101	0.090	0.219	0.145	0.167
	All Public Institutions	0.206	0.106	0.070	0.206	0.162	0.153
ACT Scores (Pearson's r)	2-Year Colleges						
	4-Year Universities	0.123	0.072		0.124		0.134
	All Public Institutions				0.064		0.080
SAT Scores (Pearson's r)	2-Year Colleges		1.000				
	4-Year Universities						
	All Public Institutions						0.321
Asset Scores (Pearson's r)	2-Year Colleges						
	4-Year Universities						
	All Public Institutions						
Compass Scores (Pearson's r)	2-Year Colleges						
	4-Year Universities		0.168		(0.163)	(0.153)	
	All Public Institutions						

One factor is significant at the .01 level with College Algebra and English Composition I for each year and for each institution type – remedial grade.

One factor is significant at the .01 level with College Algebra and English Composition I for most all years and institution types – high school GPA. However, high school GPA was not significant at 2-Year Colleges for AY2013 for College Algebra.

To summarize, the factors most significantly related to success in College Algebra or English Composition I are as follows:

Factor	Comments
1. Remedial Grade	This factor was significant for every year for both College Algebra and English Composition I. In comparing this factor to the others, it had the highest correlations of all factors.
2. High School GPA	This factor was significant for every year for both College Algebra and English Composition I except one – AY2013 for 2-Year Colleges.
3. ACT Scores	This factor was significant four times for 4-Year Universities (2 each for College Algebra and English Composition I). However, it was not significant at all for 2-Year Colleges.
4. SAT Scores	This factor was significant only twice.
5. Asset Scores	This factor was not significant for any time period.
6. Compass Scores	This was significant three times, but two times were negative correlations.

**Clearly, the best indicator of student success in both College Algebra and English Composition I for remediated students is the grade the student made in the remedial course. This emphasizes the importance of the remedial program.** Other factors that were significant are high school GPA at all institution types and ACT scores for 4-Year Universities only.



### Grade Frequencies for Students Enrolled in College Algebra: AY2010-AY2013

All Students				
2-Year Colleges	AY2010	AY2011	AY2012	AY2013
A	23.2%	24.4%	25.0%	25.1%
B	25.4%	26.5%	25.6%	27.6%
C	25.9%	24.2%	24.3%	23.6%
D	9.8%	9.4%	9.7%	8.7%
F	15.7%	15.5%	15.4%	15.0%
4-Year Universities	AY2010	AY2011	AY2012	AY2013
A	21.9%	23.2%	24.9%	24.8%
B	26.9%	26.7%	27.6%	27.7%
C	25.5%	25.1%	23.7%	23.2%
D	11.0%	11.0%	10.4%	10.3%
F	14.7%	14.1%	13.3%	14.1%
All Public Universities	AY2010	AY2011	AY2012	AY2013
A	22.5%	23.8%	24.9%	24.9%
B	26.2%	26.6%	26.6%	27.6%
C	25.7%	24.7%	24.0%	23.4%
D	10.4%	10.2%	10.1%	9.4%
F	15.2%	14.8%	14.3%	14.6%
Remediated Students Only				
2-Year Colleges		AY2011	AY2012	AY2013
A		22.4%	19.3%	17.9%
B		25.9%	24.0%	26.7%
C		25.6%	26.6%	27.8%
D		9.8%	12.7%	10.7%
F		16.3%	17.4%	17.0%
4-Year Universities		AY2011	AY2012	AY2013
A		14.5%	17.2%	14.7%
B		25.1%	24.5%	23.6%
C		28.6%	28.2%	28.6%
D		14.4%	14.9%	14.2%
F		17.4%	15.1%	18.9%
All Public Universities		AY2011	AY2012	AY2013
A		19.0%	18.3%	16.7%
B		25.5%	24.2%	25.6%
C		26.9%	27.4%	28.1%
D		11.8%	13.8%	12.0%
F		16.8%	16.3%	17.6%

### Grade Frequencies for Students Enrolled in English Composition I: AY2010-AY2013

All Students				
2-Year Colleges	AY2010	AY2011	AY2012	AY2013
A	31.4%	32.2%	31.5%	31.0%
B	30.5%	28.7%	31.2%	30.5%
C	17.7%	17.6%	17.8%	17.7%
D	5.2%	5.2%	4.7%	5.2%
F	15.2%	16.3%	14.9%	15.6%
4-Year Universities	AY2010	AY2011	AY2012	AY2013
A	34.1%	33.1%	35.5%	35.5%
B	31.7%	32.4%	31.9%	31.8%
C	17.8%	17.8%	17.3%	18.1%
D	5.4%	5.8%	5.3%	5.3%
F	11.0%	10.9%	10.0%	9.3%
All Public Universities	AY2010	AY2011	AY2012	AY2013
A	32.7%	32.6%	33.6%	33.1%
B	31.1%	30.5%	31.5%	31.1%
C	17.7%	17.7%	17.5%	17.9%
D	5.3%	5.5%	5.0%	5.2%
F	13.1%	13.7%	12.4%	12.6%
Remediated Students Only				
2-Year Colleges		AY2011	AY2012	AY2013
A		21.6%	19.1%	17.9%
B		31.6%	32.9%	31.2%
C		22.9%	24.8%	24.0%
D		6.7%	6.5%	7.2%
F		17.2%	16.8%	19.8%
4-Year Universities		AY2011	AY2012	AY2013
A		23.5%	27.1%	21.9%
B		30.0%	29.8%	28.9%
C		25.2%	21.9%	27.2%
D		8.0%	7.8%	9.1%
F		13.3%	13.5%	12.8%
All Public Universities		AY2011	AY2012	AY2013
A		22.6%	23.3%	19.6%
B		30.8%	31.2%	30.2%
C		24.1%	23.3%	25.4%
D		7.4%	7.2%	8.0%
F		15.2%	15.1%	16.8%

**Descriptive Statistics for Students Enrolled in College Algebra: AY2010-AY2013**

2-Year Colleges		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	8,950	9,831	9,297	10,216
	Mean	2.31	2.35	2.35	2.39
	Std. Dev.	1.347	1.354	1.359	1.348
HS GPA	N	3,446	3,812	3,692	3,868
	Mean	3.00	2.95	2.93	2.74
	Std. Dev.	0.567	0.558	0.639	0.893
ACT Math	N	2,581	2,638	2,541	2,629
	Mean	20.69	20.33	20.47	20.09
	Std. Dev.	3.576	3.425	3.411	3.446
SAT Math	N	12	14	10	11
	Mean	513.33	492.86	537.00	436.55
	Std. Dev.	42.498	87.919	54.985	163.668
Asset Math	N	272	237	180	142
	Mean	38.87	37.24	41.62	37.76
	Std. Dev.	15.123	14.486	17.515	17.101
Compass Math	N	1,610	1,888	1,733	2,000
	Mean	37.01	36.32	36.52	34.52
	Std. Dev.	16.817	17.318	16.197	16.231
2-Year Colleges		Remediated Students Only			
		AY2010	AY2011	AY2012	AY2013
Grade	N		1,439	2,468	3,289
	Mean		2.28	2.15	2.18
	Std. Dev.		1.352	1.346	1.318
Remed. Grade	N		1,439	2,468	3,289
	Mean		2.97	2.90	2.88
	Std. Dev.		0.948	0.955	0.940
HS GPA	N		671	1,154	1,474
	Mean		2.84	2.80	2.72
	Std. Dev.		0.547	0.576	0.642
ACT Math	N		340	560	815
	Mean		18.00	17.73	17.33
	Std. Dev.		2.583	2.331	2.252
SAT Math	N		-	2	4
	Mean		-	450.00	438.00
	Std. Dev.		-	28.284	181.740
Asset Math	N		60	88	82
	Mean		38.22	42.47	38.54
	Std. Dev.		12.984	20.315	19.311
Compass Math	N		509	897	1,252
	Mean		32.50	33.16	30.22
	Std. Dev.		14.571	13.464	12.706

**Descriptive Statistics for Students Enrolled in English Composition I: AY2010-AY2013**

2-Year Colleges		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	12,170	13,290	11,934	13,966
	Mean	2.58	2.55	2.60	2.56
	Std. Dev.	1.374	1.404	1.364	1.381
HS GPA	N	5,560	6,187	5,426	6,500
	Mean	2.84	2.80	2.78	2.57
	Std. Dev.	0.605	0.598	0.715	0.926
ACT English	N	3,370	3,458	3,149	3,711
	Mean	20.55	20.17	20.31	19.70
	Std. Dev.	4.405	4.421	5.563	4.502
SAT English	N	13	8	9	13
	Mean	464.08	526.25	534.44	440.00
	Std. Dev.	151.330	58.539	135.010	69.282
Asset English	N	468	439	343	275
	Mean	39.81	40.97	39.92	38.79
	Std. Dev.	6.903	5.871	7.104	8.425
Compass English	N	3,783	4,340	3,729	4,560
	Mean	72.39	70.74	71.23	69.55
	Std. Dev.	25.126	25.515	25.458	26.068
2-Year Colleges		Remediated Students Only			
		AY2010	AY2011	AY2012	AY2013
Grade	N		1,823	2,251	3,118
	Mean		2.34	2.31	2.20
	Std. Dev.		1.351	1.316	1.360
Remed. Grade	N		1,823	2,251	3,118
	Mean		2.87	2.94	2.78
	Std. Dev.		1.114	0.977	1.117
HS GPA	N		1,056	1,269	1,628
	Mean		2.71	2.63	2.57
	Std. Dev.		0.560	0.695	0.645
ACT English	N		459	497	850
	Mean		15.38	15.03	15.03
	Std. Dev.		4.944	10.000	4.997
SAT English	N		-	2	4
	Mean		-	41.00	32.25
	Std. Dev.		-	-	18.839
Asset English	N		56	88	88
	Mean		33.79	34.94	32.05
	Std. Dev.		12.526	10.348	10.913
Compass English	N		832	1,109	1,473
	Mean		48.50	44.87	45.40
	Std. Dev.		28.250	27.045	28.079

4-Year Universities		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	9,445	9,931	10,090	9,454
	Mean	2.30	2.34	2.40	2.39
	Std. Dev.	1.324	1.323	1.322	1.336
HS GPA	N	5,847	6,373	6,639	6,077
	Mean	3.18	3.20	3.16	3.18
	Std. Dev.	0.546	0.532	0.602	0.536
ACT Math	N	5,890	6,166	6,283	5,648
	Mean	20.81	21.27	21.19	21.33
	Std. Dev.	3.981	4.215	3.745	3.643
SAT Math	N	165	207	194	228
	Mean	506.79	528.50	530.59	530.79
	Std. Dev.	83.044	81.872	77.975	71.727
Asset Math	N	154	51	33	24
	Mean	36.51	35.61	34.39	37.21
	Std. Dev.	4.089	4.750	5.184	6.666
Compass Math	N	379	534	619	541
	Mean	38.70	41.63	40.61	42.02
	Std. Dev.	15.965	18.339	16.887	19.093
4-Year Universities		Remediated Students Only			
		AY2010	AY2011	AY2012	AY2013
Grade	N		1,109	2,319	1,812
	Mean		2.05	2.14	2.01
	Std. Dev.		1.293	1.293	1.312
Remed. Grade	N		1,109	2,319	1,812
	Mean		2.96	2.89	2.91
	Std. Dev.		0.920	0.961	0.963
HS GPA	N		699	1,548	1,232
	Mean		2.95	2.90	2.86
	Std. Dev.		0.502	0.566	0.562
ACT Math	N		670	1,407	1,099
	Mean		17.48	17.24	17.09
	Std. Dev.		2.321	2.115	2.062
SAT Math	N		10	31	29
	Mean		485.00	434.52	432.07
	Std. Dev.		49.944	71.360	72.031
Asset Math	N		9	17	14
	Mean		34.00	33.71	36.71
	Std. Dev.		5.590	5.486	4.983
Compass Math	N		123	316	257
	Mean		32.03	33.32	31.96
	Std. Dev.		11.187	12.301	11.808

4-Year Universities		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	11,825	12,588	12,852	12,561
	Mean	2.72	2.71	2.78	2.79
	Std. Dev.	1.284	1.28	1.261	1.241
HS GPA	N	8,551	9,432	9,776	9,392
	Mean	3.10	3.11	3.09	3.13
	Std. Dev.	0.576	0.568	0.641	0.561
ACT English	N	7,896	8,461	8,612	8,313
	Mean	21.50	21.64	21.81	21.53
	Std. Dev.	4.900	4.831	4.645	4.543
SAT English	N	262	305	364	397
	Mean	494.08	506.82	496.91	503.49
	Std. Dev.	82.794	91.551	79.356	80.495
Asset English	N	259	79	54	33
	Mean	42.32	39.59	41.41	40.45
	Std. Dev.	4.767	5.090	5.203	5.646
Compass English	N	959	1,382	1,413	1,182
	Mean	77.51	75.94	75.28	74.42
	Std. Dev.	21.140	22.421	23.894	24.661
4-Year Universities		Remediated Students Only			
		AY2010	AY2011	AY2012	AY2013
Grade	N		1,852	2,490	2,376
	Mean		2.42	2.49	2.38
	Std. Dev.		1.293	1.325	1.276
Remed. Grade	N		1,852	2,490	2,376
	Mean		2.86	2.92	2.84
	Std. Dev.		1.060	1.031	0.953
HS GPA	N		1,493	1,986	1,911
	Mean		2.85	2.74	2.74
	Std. Dev.		0.500	0.645	0.598
ACT English	N		1,194	1,499	1,537
	Mean		17.07	16.66	16.01
	Std. Dev.		3.822	3.865	3.573
SAT English	N		26	66	60
	Mean		401.54	411.21	359.00
	Std. Dev.		46.878	61.181	145.855
Asset English	N		22	24	24
	Mean		37.36	40.17	26.75
	Std. Dev.		5.169	4.575	17.967
Compass English	N		384	566	452
	Mean		63.88	60.24	57.13
	Std. Dev.		25.298	26.600	26.485

All Public Institutions		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	18,395	19,762	19,387	19,670
	Mean	2.30	2.34	2.38	2.39
	Std. Dev.	1.335	1.338	1.34	1.342
HS GPA	N	9,293	10,185	10,331	9,945
	Mean	3.11	3.10	3.08	3.01
	Std. Dev.	0.560	0.556	0.626	0.729
ACT Math	N	8,471	8,804	8,824	8,277
	Mean	20.77	20.99	20.99	20.94
	Std. Dev.	3.863	4.018	3.666	3.629
SAT Math	N	177	221	204	239
	Mean	507.23	526.24	530.91	526.45
	Std. Dev.	80.881	82.517	76.919	80.150
Asset Math	N	426	288	213	166
	Mean	38.02	36.95	40.50	37.68
	Std. Dev.	12.375	13.299	16.430	16.005
Compass Math	N	1,989	2,422	2,352	2,541
	Mean	37.33	37.49	37.59	36.12
	Std. Dev.	16.668	17.683	16.477	17.154
All Public Institutions		Remediated Students Only			
		AY2010	AY2011	AY2012	AY2013
Grade	N		2,548	4,787	5,101
	Mean		2.18	2.14	2.12
	Std. Dev.		1.332	1.320	1.318
Remed. Grade	N		2,548	4,787	5,101
	Mean		2.97	2.89	2.89
	Std. Dev.		0.936	0.958	0.948
HS GPA	N		1,370	2,702	2,706
	Mean		2.90	2.86	2.78
	Std. Dev.		0.528	0.572	0.611
ACT Math	N		1,010	1,967	1,914
	Mean		17.66	17.38	17.19
	Std. Dev.		2.423	2.189	2.147
SAT Math	N		10	33	33
	Mean		485.00	435.45	432.79
	Std. Dev.		49.944	69.376	87.408
Asset Math	N		69	105	96
	Mean		37.67	41.05	38.27
	Std. Dev.		12.328	18.984	17.938
Compass Math	N		632	1,213	1,509
	Mean		32.41	33.20	30.52
	Std. Dev.		13.970	13.166	12.571

All Public Institutions		All Students			
		AY2010	AY2011	AY2012	AY2013
Grade	N	23,995	25,878	24,786	26,527
	Mean	2.65	2.63	2.69	2.67
	Std. Dev.	1.333	1.348	1.314	1.321
HS GPA	N	14,111	15,619	15,202	15,892
	Mean	3.00	2.99	2.98	2.90
	Std. Dev.	0.602	0.599	0.684	0.781
ACT English	N	11,266	11,919	11,761	12,024
	Mean	21.22	21.21	21.41	20.97
	Std. Dev.	4.777	4.763	4.952	4.609
SAT English	N	275	313	373	410
	Mean	492.67	507.32	497.81	501.48
	Std. Dev.	87.025	90.846	81.057	80.860
Asset English	N	727	518	397	308
	Mean	40.70	40.76	40.12	38.97
	Std. Dev.	6.338	5.776	6.890	8.182
Compass English	N	4,742	5,722	5,142	5,742
	Mean	73.43	72.00	72.35	70.55
	Std. Dev.	24.458	24.901	25.101	25.858
All Public Institutions		Remediated Students Only			
		AY2010	AY2011	AY2012	AY2013
Grade	N		3,675	4,741	5,494
	Mean		2.38	2.40	2.28
	Std. Dev.		1.323	1.324	1.327
Remed. Grade	N		3,675	4,741	5,494
	Mean		2.87	2.93	2.81
	Std. Dev.		1.087	1.006	1.050
HS GPA	N		2,549	3,255	3,539
	Mean		2.79	2.69	2.66
	Std. Dev.		0.530	0.667	0.625
ACT English	N		1,653	1,996	2,387
	Mean		16.60	16.26	15.66
	Std. Dev.		4.230	6.048	4.162
SAT English	N		26	68	64
	Mean		401.54	400.32	338.58
	Std. Dev.		46.878	87.191	162.157
Asset English	N		78	112	112
	Mean		34.79	36.06	30.91
	Std. Dev.		11.045	9.639	12.845
Compass English	N		1,216	1,675	1,925
	Mean		53.35	50.06	48.15
	Std. Dev.		28.263	27.853	28.149

## College Algebra Grades Correlated with Other Factors using Pearson's r Correlations: AY2010-AY2013

<b>All Students</b>								
<b>2-Year Colleges</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.295	0.01	0.290	0.01	0.279	0.01	0.074	0.01
ACT Math	0.154	0.01	0.134	0.01	0.173	0.01	0.070	0.01
SAT Math					0.685	0.05		
Asset Math								
Compass Math	0.097	0.01	0.075	0.01	0.096	0.01		
<b>4-Year Universities</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.437	0.01	0.464	0.01	0.366	0.01	0.390	0.01
ACT Math	0.351	0.01	0.347	0.01	0.310	0.01	0.314	0.01
SAT Math	0.352	0.01	0.284	0.01	0.383	0.01	0.381	0.01
Asset Math	0.181	0.05						
Compass Math	0.188	0.01	0.283	0.01	0.169	0.01	0.102	0.05
<b>All Public Institutions</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.389	0.01	0.405	0.01	0.345	0.01	0.233	0.01
ACT Math	0.294	0.01	0.295	0.01	0.278	0.01	0.246	0.01
SAT Math	0.335	0.01	0.290	0.01	0.393	0.01	0.334	0.01
Asset Math								
Compass Math	0.116	0.01	0.133	0.01	0.135	0.01	0.061	0.01
<b>Remediated Students Only</b>								
<b>2-Year Colleges</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.441	0.01	0.438	0.01	0.392	0.01
HS GPA			0.216	0.01	0.108	0.01	0.064	0.05
ACT Math								
SAT Math					1.000	0.01		
Asset Math								
Compass Math								
<b>4-Year Universities</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.457	0.01	0.383	0.01	0.385	0.01
HS GPA			0.212	0.01	0.101	0.01	0.090	0.01
ACT Math			0.123	0.01	0.072	0.01		
SAT Math								
Asset Math								
Compass Math					0.168	0.01		
<b>All Public Institutions</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.446	0.01	0.412	0.01	0.388	0.01
HS GPA			0.206	0.01	0.106	0.01	0.070	0.01
ACT Math			0.080	0.05	0.052	0.05	0.051	0.05
SAT Math								
Asset Math								
Compass Math					0.073	0.05		

## English Composition I Grades Correlated with Other Factors using Pearson's r Correlations: AY2010-AY2013

<b>All Students</b>								
<b>2-Year Colleges</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.289	0.01	0.266	0.01	0.246	0.01	0.109	0.01
ACT English	0.151	0.01	0.137	0.01	0.134	0.01	0.125	0.01
SAT English					0.670	0.01		
Asset English			0.145	0.01	0.179	0.01	0.141	0.05
Compass English	0.087	0.01	0.099	0.01	0.061	0.01	0.119	0.01
<b>4-Year Universities</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.382	0.01	0.385	0.01	0.322	0.01	0.361	0.01
ACT English	0.276	0.01	0.295	0.01	0.246	0.01	0.276	0.01
SAT English			0.224	0.01				
Asset English	0.174	0.01						
Compass English					(0.077)	0.01	(0.089)	0.01
<b>All Public Institutions</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.352	0.01	0.346	0.01	0.307	0.01	0.249	0.01
ACT English	0.244	0.01	0.256	0.01	0.221	0.01	0.243	0.01
SAT English			0.223	0.01				
Asset English	0.089	0.05	0.143	0.01	0.173	0.01	0.128	0.05
Compass English	0.069	0.01	0.078	0.01	0.028	0.05	0.082	0.01
<b>Remediated Students Only</b>								
<b>2-Year Colleges</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.399	0.01	0.370	0.01	0.409	0.01
HS GPA			0.178	0.01	0.169	0.01	0.115	0.01
ACT English								
SAT English								
Asset English			(0.280)	0.05				
Compass English								
<b>4-Year Universities</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.399	0.01	0.370	0.01	0.417	0.01
HS GPA			0.219	0.01	0.145	0.01	0.167	0.01
ACT English			0.124	0.01	0.051	0.05	0.134	0.01
SAT English			0.487	0.05			0.260	0.05
Asset English							0.413	0.05
Compass English			(0.163)	0.01	(0.153)	0.01		
<b>All Public Institutions</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.399	0.01	0.368	0.01	0.413	0.01
HS GPA			0.206	0.01	0.162	0.01	0.153	0.01
ACT English			0.064	0.01	0.052	0.05	0.080	0.01
SAT English			0.487	0.05			0.321	0.01
Asset English								
Compass English			(0.072)	0.05				

## College Algebra Grades Correlated with Other Factors using Spearman's rho Correlations: AY2010-AY2013

All Students								
2-Year Colleges	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.327	0.01	0.313	0.01	0.337	0.01	0.212	0.01
ACT Math	0.155	0.01	0.129	0.01	0.171	0.01	0.075	0.01
SAT Math								
Asset Math								
Compass Math	0.088	0.01	0.067	0.01	0.090	0.01		
4-Year Universities	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.467	0.01	0.490	0.01	0.433	0.01	0.425	0.01
ACT Math	0.355	0.01	0.398	0.01	0.321	0.01	0.334	0.01
SAT Math	0.367	0.01	0.271	0.01	0.384	0.01	0.368	0.01
Asset Math	0.312	0.01						
Compass Math	0.151	0.01	0.293	0.01	0.194	0.01	0.101	0.05
All Public Institutions	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.420	0.01	0.432	0.01	0.410	0.01	0.354	0.01
ACT Math	0.295	0.01	0.327	0.01	0.284	0.01	0.259	0.01
SAT Math	0.348	0.01	0.280	0.01	0.390	0.01	0.366	0.01
Asset Math								
Compass Math	0.102	0.01	0.120	0.01	0.138	0.01	0.044	0.05
Remediated Students Only								
2-Year Colleges	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.479	0.01	0.467	0.01	0.429	0.01
HS GPA			0.220	0.01	0.129	0.01	0.102	0.01
ACT Math								
SAT Math					1.000	0.01		
Asset Math							(0.225)	0.05
Compass Math							(0.060)	0.05
4-Year Universities	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.473	0.01	0.395	0.01	0.393	0.01
HS GPA			0.231	0.01	0.152	0.01	0.109	0.01
ACT Math			0.106	0.01	0.079	0.01		
SAT Math								
Asset Math								
Compass Math					0.195	0.01		
All Public Institutions	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.474	0.01	0.431	0.01	0.412	0.01
HS GPA			0.216	0.01	0.144	0.01	0.100	0.01
ACT Math			0.066	0.05	0.050	0.05	0.049	0.05
SAT Math								
Asset Math							(0.245)	0.05
Compass Math					0.094	0.01		

## English Composition I Grades Correlated with Other Factors using Spearman's rho Correlations: AY2010-AY2013

<b>All Students</b>								
<b>2-Year Colleges</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.302	0.01	0.286	0.01	0.297	0.01	0.211	0.01
ACT English	0.179	0.01	0.164	0.01	0.191	0.01	0.163	0.01
SAT English					0.861	0.01		
Asset English	0.152	0.01	0.206	0.01	0.291	0.01	0.219	0.01
Compass English	0.129	0.01	0.136	0.01	0.107	0.01	0.148	0.01
<b>4-Year Universities</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.396	0.01	0.403	0.01	0.375	0.01	0.387	0.01
ACT English	0.288	0.01	0.316	0.01	0.268	0.01	0.298	0.01
SAT English			0.244	0.01			0.100	0.05
Asset English	0.196	0.01						
Compass English								
<b>All Public Institutions</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
HS GPA	0.367	0.01	0.366	0.01	0.361	0.01	0.342	0.01
ACT English	0.262	0.01	0.279	0.01	0.260	0.01	0.273	0.01
SAT English			0.242	0.01			0.106	0.05
Asset English	0.152	0.01	0.198	0.01	0.257	0.01	0.197	0.01
Compass English	0.113	0.01	0.119	0.01	0.074	0.01	0.113	0.01
<b>Remediated Students Only</b>								
<b>2-Year Colleges</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.385	0.01	0.362	0.01	0.382	0.01
HS GPA			0.189	0.01	0.176	0.01	0.134	0.01
ACT English					0.122	0.01		
SAT English								
Asset English								
Compass English								
<b>4-Year Universities</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.370	0.01	0.356	0.01	0.399	0.01
HS GPA			0.210	0.01	0.158	0.01	0.171	0.01
ACT English			0.134	0.01	0.061	0.05	0.141	0.01
SAT English			0.422	0.05				
Asset English								
Compass English			(0.153)	0.01	(0.133)	0.01		
<b>All Public Institutions</b>	AY2010		AY2011		AY2012		AY2013	
	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Remed. Grade			0.377	0.01	0.358	0.01	0.388	0.01
HS GPA			0.209	0.01	0.177	0.01	0.167	0.01
ACT English			0.084	0.01	0.088	0.01	0.092	0.01
SAT English			0.422	0.05				
Asset English								
Compass English			(0.074)	0.05				