TO: Maryland State Board of Education

FROM: Karen B. Salmon, Ph.D.

DATE: February 25, 2020

SUBJECT: Assessment Graduation Performance Requirement

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The Maryland State Department of Education (MSDE) is asking the State Board of Education to re-visit the requirement for the graduating class of 2024 to achieve a 750 scaled score on both the Maryland Comprehensive Assessment Program (MCAP) assessments in Algebra I and English language arts/literacy (ELA) 10.

At the request of the MSDE, the Maryland Assessment Research Center (MARC) conducted a study to track Maryland students through their first year in college and provide empirical data on how Maryland students who took PARCC subsequently performed in college. The study compared performance on the PARCC assessments to performance on the SAT and college GPA.

Results of the study show that students who achieved scaled score of 725, are being successful in college as indicated by the College Board SAT Benchmarks*. The study also indicates that students achieving a 750are far-exceeding the minimum levels of college success.

The MSDE recommends the following:

- Retain the graduation requirement score of 725 for both Algebra I and ELA 10 for all graduating classes.

This recommendation is based upon the MARC study that shows:

- Students who earn 725 in Algebra I and a 725 in ELA 10 are being successful in college.
- Students who earn 750 in Algebra I and a 750 in ELA 10 are achieving at far higher levels than what indicates college success.

*https://collegereadiness.collegeboard.org/pdf/educator-benchmark-brief.pdf

Purpose

- Present on how the scores of 725 and 750 relate to students' success in college.

- Empirical Evidence will be presented:

  - Results from the investigation of the relationship among PARCC performance , SAT performance, and first-year college Grade Point Average (GPA)

- To track students from high school assessment performance to college performance takes several years to complete.

- The results and final report from this study were first available in September of 2019.

Maryland Assessment Research Center (MARC)

- MARC provides support for a range of assessment activities in the state, the region and the nation.

- MARC conducts basic and applied research to enhance the quality of assessment practice and knowledge.

- To accomplish its purposes, MARC houses expertise in assessment design, development, implementation, analysis, reporting and policy issues as well as the technical aspects of the quantitative theories that form the foundations of measurement.

- We have two of MARC's nationally recognized experts in the field of educational measurement with us here today along with the president of the National Council on Measurement in Education (NCME) - all are members of our Technical Advisory Committee (TAC).

MARC and the
Technical Advisory Committee (TAC)

- MSDE's TAC consists of national experts in psychometrics and large scale assessment. They advise on design, development and reporting of the MCAP.

- Dr. Hong Jiao is nationally recognized for her contributions to educational measurement, is the director of MARC, and leads our TAC.

- Dr. Robert Lissitz has chaired several national committees in Educational Measurement and Statistics, is co-director of MARC, and co-leads our TAC.

- Dr. Stephen G. Sireci is President of the National Council on Measurement in Education, a Distinguished Professor at the University of Massachusetts Amherst, and a member of our TAC.

MARC Study

- Three years ago, MSDE requested that MARC undertake a study to track Maryland students through their first year in college and provide empirical data on how Maryland students who took PARCC subsequently performed in college.

- MARC used both MSDE and Maryland Longitudinal Data System Center (MLDSC) data for Algebra I and English Language Arts/Literacy 10 (ELA/L 10).

- The study used SAT Math and Evidence Based Reading and Writing (EBRW) test score data from 2015 to 2017 and GPA data from 2015 to 2018.

- The results from the study apply to students in Maryland who went on to postsecondary education.

SAT Benchmarks

- Each SAT assessment has an associated set of metrics called the *college and career readiness benchmarks*.

- The college and career readiness benchmarks are based on actual student success in entry-level college courses.

- Students who achieve a 480 on the EBRW or 530 on Math are deemed college and career ready.

Assessment	EBRW Benchmark	Math Benchmark
SAT	480	530

- The SAT benchmark scores represent a 75% likelihood of a student achieving at least a C grade in a first-semester, credit-bearing college course in a related subject.

https://collegereadiness.collegeboard.org/pdf/educator-benchmark-brief.pdf

NCEE Standard

- The National Center on Education and the Economy (NCEE) released a report on what indicates student success in first-year credit-bearing community college courses.

- Their definition of success was a GPA of 2.75 or above.

http://ncee.org/wp-content/uploads/2013/05/NCEE_EnglihReport_May2013.pdf

College Grade Point Average

End-of-first-year GPA Calculation

- Weighted average of the cumulative GPA calculated at the earliest term when a student earned a total of 30 or more credits from all the institutions attended.
- The GPAs were calculated from *credit bearing courses*.

PARCC Equivalent Scores to GPA Cut Scores

PARCC Assessment	College GPA 2.65	College GPA 2.75	College GPA 3.0	College GPA 4.0
Algebra I	711	721	746	843
ELA/L 10	706	716	741	841

The 2.75 GPA, or B- average, is indicative of college success.

GPA and SAT Scores Equivalent to PARCC Cut Scores

- Regression analyses was used on the SAT Math and SAT EBRW test scores to predict the end-of-first-year college cumulative GPA.

PARCC Test	Cut	College GPA	SAT	Cut	College GPA	SAT
ALG I	725	*2.79*	*534*	750	3.04	559
ELA10	725	*2.84*	*547*	750	3.09	572

- For students who scored a 725 on PARCC Algebra I, the equivalent GPA would be a 2.79.
- For PARCC ELA/L 10, the equivalent GPA would be 2.84.

Mean College GPA for Each PARCC Performance Level

PARCC Test	PARCC Performance Levels	
	Level 3 (725-749)	Level 4*
	Mean GPA	Mean GPA
ALG I	2.96	3.34
ELA10	3.14	3.22

For all students that scored a Level 3 on PARCC Algebra I (725-749), the mean GPA of these students was 2.96 and for ELA 10 it was 3.14.

Level 4 for Algebra I is 750-804 and for ELA 10 is 750-793.

2019 Impact Data for Algebra I

Grade	Number of Test Takers	Number Meeting at 725	% Meeting at 725	Number Meeting at 750	% Meeting at 750	Difference from 750 to 725
6	247	242	98.0	216	87.4	26
7	7757	7376	95.1	6297	81.2	1079
8	21605	17617	81.5	12238	56.6	5379
9	37472	17193	45.9	6952	18.6	10241
10	16228	4427	27.3	817	5.0	3610
11	9158	2029	22.2	356	3.9	1673
12	1993	409	20.5	83	4.2	326
Total	94460	49293	49.8	26964	27.2	22334

With an increased graduation requirement of 750, 22,334 Maryland students who would have otherwise succeeded in college may not have achieved a high enough score in 2019 to graduate from high school.

2019 Impact Data for ELA/L 10

Grade	Number of Test Takers	Number Meeting at 725	% Meeting at 725	Number Meeting at 750	% Meeting at 750	Difference from 750 to 725
8	3	1	33.3	-	0.0	1
9	2856	830	29.1	366	12.8	464
10	60130	46136	76.7	35767	59.5	10369
11	15100	4476	29.6	1373	9.1	3103
12	6466	1406	21.7	338	5.2	1068
Total	84555	52849	62.5	37844	44.8	15005

With an increased graduation requirement of 750, 15005 Maryland students who would have otherwise succeeded in college may not have achieved a high enough score in 2019 to graduate from high school.

Summary

- The MARC study shows that a GPA of *2.75* (which is a B-) in college would have an equivalent score for Algebra I at *721* and for ELA 10 at *716*.

- Requiring high school students to earn test scores above what B- college students earned is arguably too high.

Summary

- The MARC study shows that students who earn 725 in Algebra I and a 725 in ELA 10 are being successful in college.

- The Technical Advisory Committee recommends using 725 as the graduation cut score requirement.

Recommendation

- Retain the graduation requirement score of 725 for both Algebra I and ELA 10 for all graduating classes.

Thank you