



October 22, 2019

Secondary Math Instruction in Broward County Public Schools

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Agenda

- **Math Standards & Assessments in FL & BCPS**
- **Problem of Practice → Algebra Readiness & achievement**
- **Systems, cohorts & interventions in math instruction**
- **Changes to State Statutes impacting graduation eligibility**
- **Next Steps**
- **Appendix**
 - **Data Sets**



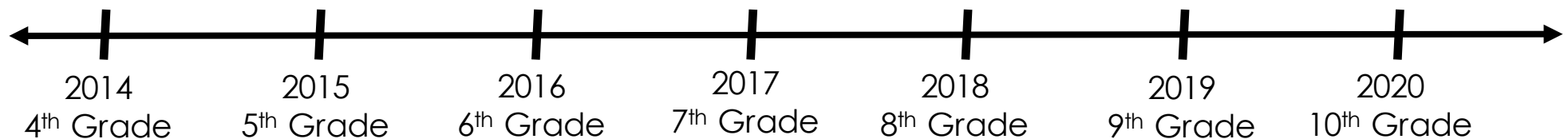
History of Math Standards

1998 – 2010: Sunshine State Standards (FCAT)

2011 – 2014: Next Generation Sunshine State Standards (FCAT 2.0)

2015 – Present: Common Core State Standards & Mathematics Florida Standards (FSA)

Present – ????: Awaiting State committees



Problems of Practice

How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?

What do we do when students are not Algebra ready by the end of 8th grade?



Problem of Practice

How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?



Middle School Math Student Cohort 2024 Data

Sixth Grade

	2016	2017	2018	2019	16-19 change
Math Achievement %	52	55	55	57	5
Math Learning Gains %	46	47	44	46	0
Math Low 25 Gains %	37	38	35	39	2

Seventh Grade

Math Achievement %	57	59	59	58	1
Math Learning Gains %	61	64	62	60	-1
Math Low 25 Gains %	45	47	46	45	0

Eighth Grade

Math Achievement %	66	64	64	62	-4
Math Learning Gains %	70	70	67	64	-6
Math Low 25 Gains %	61	61	61	56	-5

**16 – 18
Change**

+12

+21

+24

Data Source: Data retrieved from Student Assessment & Research School Grades dashboard on 10/10/19. All data reflects Math Achievement, Math Learning Gains, and Math Low 25 Gains for Traditional BCPS schools only.



Middle School Math Student Cohort 2023 Data

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Eighth Grade

Math Achievement %	66	64	64	62	-4
Math Learning Gains %	70	70	67	64	-6
Math Low 25 Gains %	61	61	61	56	-5

17 - 19 Change

+7

+17

+18

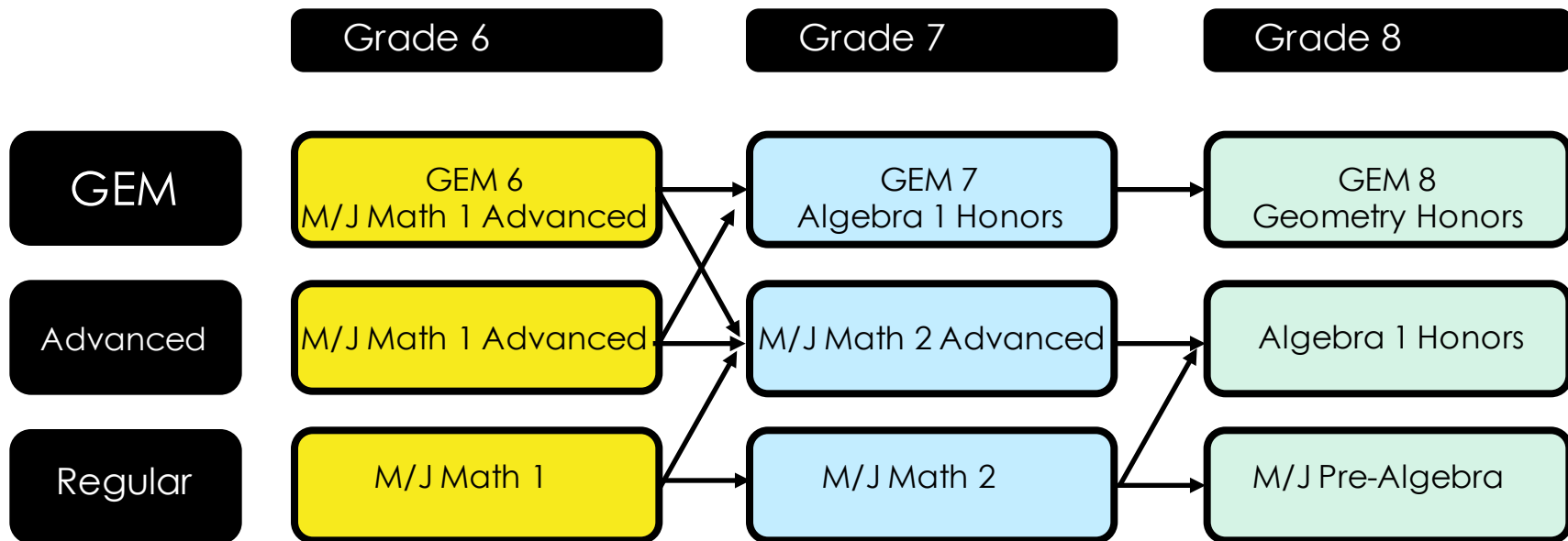
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Middle School Courses

How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?

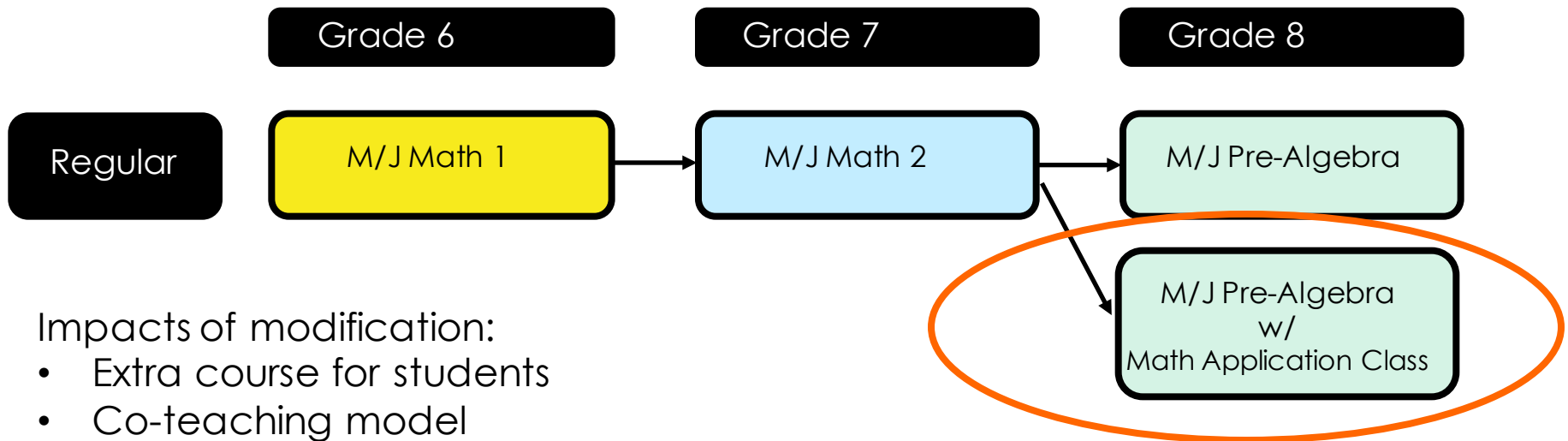
Traditional Progressions of courses:



Middle School Courses

How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?

Traditional Progressions of courses **proposed modification:**



Impacts of modification:

- Extra course for students
- Co-teaching model
- Block vs Traditional Schedule
- PBL training
- STEM+CS training
 - CS Math Class
- CTACE training



Systems, Cohorts, & Interventions

How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?

- Starting School Year 2017/18
 - Reimagining Middle Grades (RMG)
- School Year 2018/19
 - Supporting Teachers Enactment of the Probability and Statistics Standards (STEPSS) Grant
 - Partnership with FSU to provide professional development and statistics/probability curriculum modules
- Summer 2019
 - Secondary Learning, Student Assessment and Research, and OSPA collaborated to ensure that students are scheduled correctly in accelerated courses in middle school.
- *Lessons Learned from Early Literacy*: Schedule most effective teachers w/ Pre Algebra students



Systems, Cohorts, & Interventions

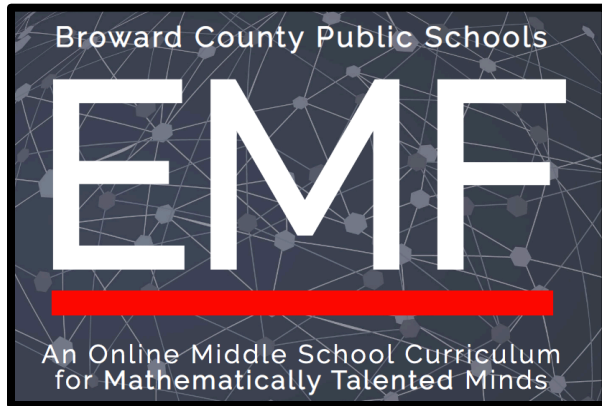
How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?

- Standards Task Force
- Math Coaches Meeting
- On-Site professional development
- PD to practice model
- BECON recording of exemplar lessons for student and teacher use
- Continued Professional Development on how to use curriculum located in CANVAS
- Middle School Cadre work with Assistant Principal over math and collaborative visits
- Expanding Algebra Project schools
 - Shifting year 1 of Algebra Project to 8th grade



Middle School Acceleration

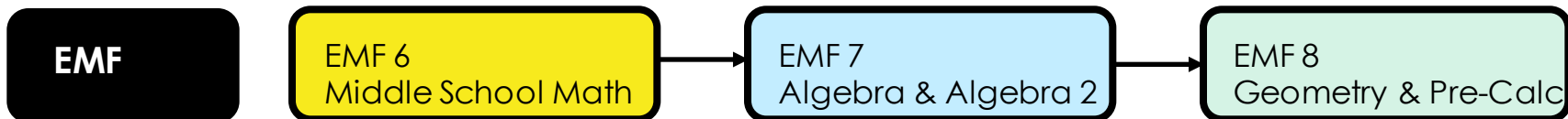
How do we prepare all students to be Algebra Proficient/Ready by the end of 8th grade?



Elements of Mathematics: Foundations (EMF) is an online curriculum in modern mathematics created by the Institute for Mathematics & Computer Science (IMACS) specifically for mathematically talented students.



- School Year 2016/17
 - New Accelerated Progression
 - Partnership with BCPS and IMACS for mathematically talented students in grades 6 - 8



Problem of Practice

What do we do when
students are not Algebra
ready by the end of 8th
grade?



Algebra 1 Data

Algebra 1		2016	2017	2018	2019	16-19 Change
9 th Grade	Math Achievement	46	61	58	56	+10
	Math Learning Gains	33	41	41	40	+7
	Math Low 25 Gains %	35	41	41	37	+2
10 th Grade	Math Achievement	9	18	15	18	+9
	Math Learning Gains	40	39	37	46	+6
	Math Low 25 Gains %	46	42	42	49	+3

Data Source: Data retrieved from Student Assessment & Research School Grades dashboard on 10/10/19. All data reflects Math Achievement, Math Learning Gains, and Math Low 25 Gains for Traditional BCPS schools only.



Geometry Data

Geometry		2016	2017	2018	2019	16-19 Change
10 th Grade	Math Achievement	51	64	63	64	+13
	Math Learning Gains	40	54	48	50	+10
	Math Low 25 Gains %	37	47	46	53	+16
11 th Grade	Math Achievement	20	35	26	19	-1
	Math Learning Gains	29	52	37	29	0
	Math Low 25 Gains %	31	53	39	33	+2

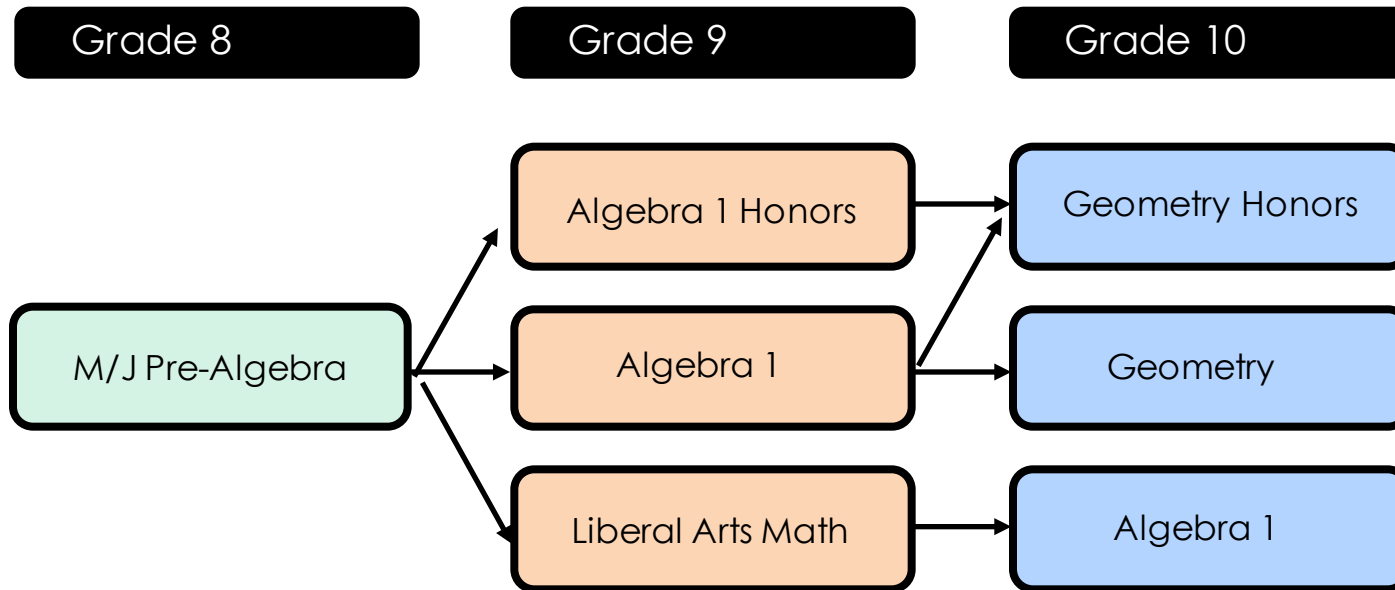
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High School Courses

What do we do when students are not Algebra ready by the end of 8th grade?

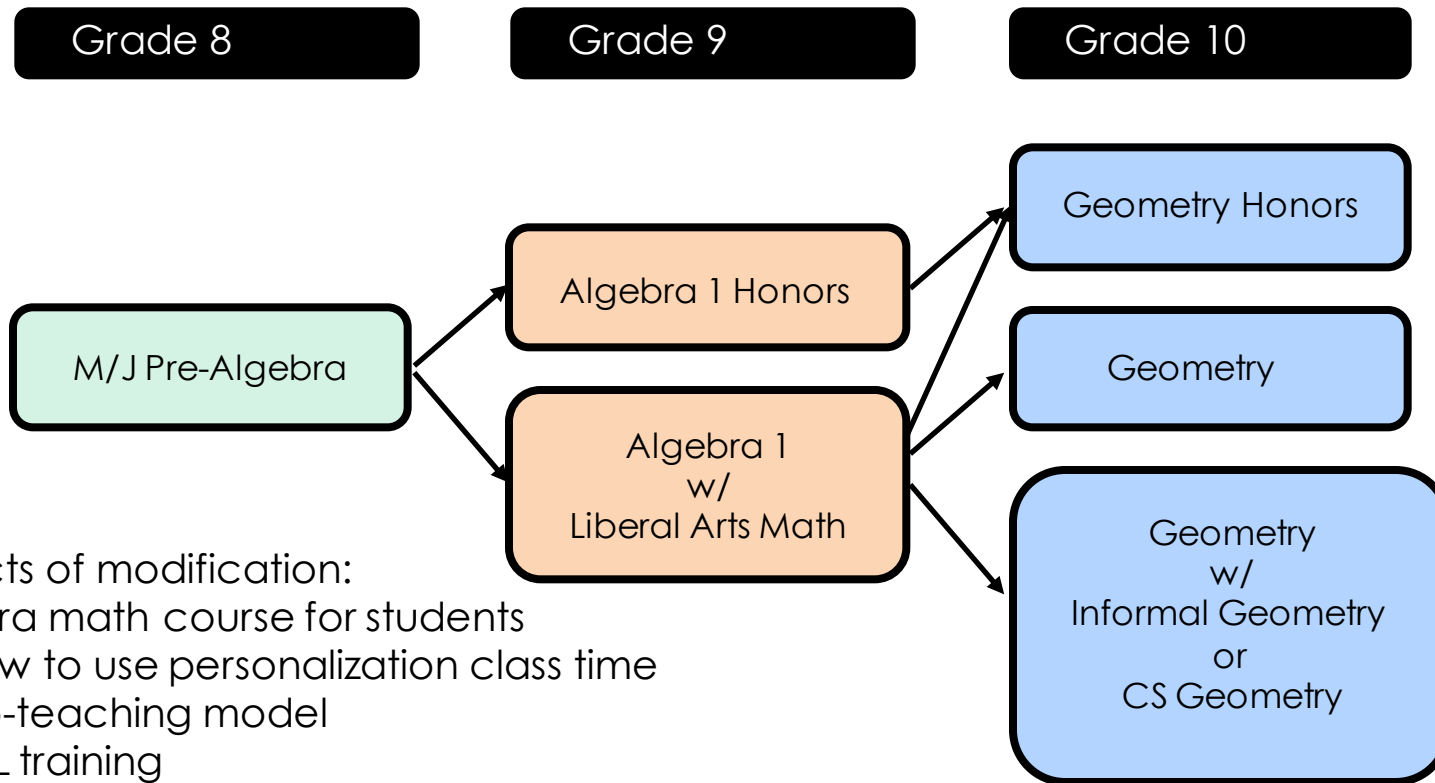
Traditional Progressions of courses:



High School Courses

What do we do when students are not Algebra ready by the end of 8th grade?

Traditional Progressions of courses **proposed modification:**



Impacts of modification:

- Extra math course for students
- How to use personalization class time
- Co-teaching model
- PBL training
- STEM+CS training
 - Magic Leap
- CTACE training



Systems, Cohorts, & Interventions

What do we do when students are not Algebra ready by the end of 8th grade?

- Summer 2015
 - Algebra Summer Bridge Program
 - Incremental growth at schools, ROI too low to continue
- School Year 2016/17
 - Algebra Nation and Geometry Nation curriculum were fully integrated
 - Changes in scheduling procedures: Liberal Arts Math for low performing 9th graders.
 - Large increases in student growth and proficiency scores
 - 9th Algebra 16 – 17: **+15 points**
 - 10th Geometry 16 – 17: **+13 points**
- School Year 2017/18
 - Partnership with Algebra Project



Systems, Cohorts, & Interventions

What do we do when students are not Algebra ready by the end of 8th grade?



THE ALGEBRA PROJECT INC.

The Algebra Project uses mathematics literacy as an organizing tool to guarantee quality public school education for all children in the United States of America.

- Curriculum includes:
 - SEL, PBL, and real world experiences for students and teachers
 - Conceptual understanding and procedural skill building
- Algebra Project cohort consists of two years of double-blocking students in math courses to recover lost knowledge and skills
- Professional Development provided to teachers during summer (w/ students) and school year support



Systems, Cohorts, & Interventions

What do we do when students are not Algebra ready by the end of 8th grade?



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- Hallandale High School first cohort data
 - 37 students that were Level 1 in 8th grade math entered the program in 9th grade and 51% were proficient in Algebra at the end of 10th grade
 - 4 students: Level 4
 - 15 students: Level 3
 - 11 students: Level 2
 - 5 students: Level 1
 - 2 students: No Score
- Hallandale (year 3), Coconut Creek (year 2), Boyd Anderson & Northeast (year 1)
- Currently working on 5-year NSF grant (BCPS, AP, FIU, BC) for sustainability and expansion



Systems, Cohorts, & Interventions

What do we do when students are not Algebra ready by the end of 8th grade?

- Summer 2019
 - Partnership with UF to provide one-on-one tutoring for Algebra retakes
 - 70 students using iPads to communicate with Tutors
 - Waiting on data for Fall 2019 retakes
- *Lessons Learned from Early Literacy*: Schedule most effective teachers w/ Algebra 1 students
- Standards Task Force
- Math Coaches Meeting
- On-Site professional development
- PD to practice model



Systems, Cohorts, & Interventions

What do we do when students are not Algebra ready by the end of 8th grade?

- Continued Professional Development on how to use curriculum located in CANVAS
- High School Cadre work with Assistant Principal over math and math teacher leader regarding Algebra instruction
 - Monthly PD Calendar
 - Leading indicator alignment
 - Sharing of best practices
- BECON recording of exemplar lessons for student and teacher use
- Expanding Algebra Project schools
 - Shifting year 1 of Algebra Project to 8th grade
- Real-World connections in math class – connection to new strategic plan



Collaboration on sub-groups

- Strong collaboration with Secondary Learning, OSPA, ESLs, and ESOL to provide wrap around support to sub-groups
- ESE considerations
 - Universal Design for Learning (UDL) lesson development for access for all students
- ESOL considerations
 - Sheltered Instruction Observation Protocol (SIOP): International Academies
 - WIDA resources
 - ELlevation use
 - Results from ACCESS for ELLs to be used to plan differentiated instruction



State Statutes

Changes to Concordant Scores for Algebra 1 & Grade 10 FSA ELA



Rule 6A-1.09422

Section (8)(b)2. [Mathematics] Beginning with students who entered grade 9 in the 2018-19* school year, students and adults who have not yet earned their required passing score on the Algebra 1 EOC assessment, may meet this testing requirement to qualify for a high school diploma by earning a comparative passing score on the Math section of the Preliminary SAT/National Merit Scholarship Qualifying Test (PSAT/NMSQT), the SAT or the ACT. For eligible students, the comparative passing scale score shall be a score equal to or greater than four hundred and thirty **(430)** on the 160 to 760 scale for the **PSAT/NMSQT Math section**, four hundred and twenty **(420)** on the 200 to 800 scale for the **SAT Math section** or equal to or greater than sixteen **(16)** on the 1 to 36 scale for the **ACT Math section**.

*This school year's current 10th graders



Rule 6A-1.09422

Section (8)(a)2. [ELA] Beginning with students who entered grade 9 in the 2018-19* school year, students and adults who have not yet earned their required passing score on the Grade 10 FSA ELA Assessment, may meet this testing requirement to qualify for a high school diploma by earning a concordant passing score on the EBRW section of the SAT or the average of the English and Reading subject test scores for the ACT. For eligible students, the concordant passing scale score for the **SAT EBRW** shall be a score equal to or greater than four hundred and eighty (**480**) on the 200 to 800 scale, and the concordant passing scale score for the **average of the English and Reading subject test scores on the ACT** shall be a score equal to or greater than eighteen (**18**) on the 1 to 36 scale. For the ACT, if the average of the two subject test scores results in a decimal of .5, the score shall be rounded up to the next whole number. The scores for the English and Reading subject tests on the ACT are not required to come from the same test administration

*This school year's current 10th graders



Concordant Scores

Table 3: Concordant and Comparative Scores

Grade 10 FSA ELA or Grade 10 FCAT 2.0 Reading	
Available for <i>all</i> students who entered grade 9 in 2010–11 and beyond:	
SAT Evidence-Based Reading and Writing (EBRW)*	480
ACT English and Reading subtests**	18
Available <i>only</i> for students who entered grade 9 prior to 2018–19:	
SAT EBRW*	430
SAT Reading Subtest***	24
ACT Reading	19
Algebra 1 EOC (FSA or NGSSS)	
Available for <i>all</i> students who entered grade 9 in 2010–11 and beyond:	
PSAT/NMSQT Math****	430
SAT Math*****	420
ACT Math	16
Available <i>only</i> for students who entered grade 9 prior to 2018–19:	
PERT Mathematics	97

*Administered in March 2016 or beyond. The combined score for the EBRW must come from the same administration of the Reading and Writing subtests.

**The average of the English and Reading subtests. If the average of the two subject test scores results in a decimal (0.5), the score shall be rounded up to the next whole number. The scores for the English and Reading subject tests are not required to come from the same test administration.

***Administered prior to March 2016.

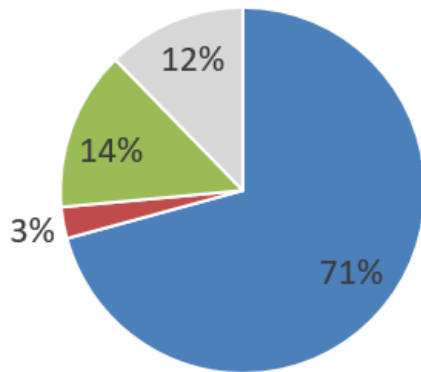
****Administered in 2015 or beyond. Students who entered grade 9 in 2010–11 and beyond may also use a comparative score of 39 on PSAT/NMSQT Math if it was earned prior to 2015.

*****Administered in March 2016 or beyond. Students who entered grade 9 in 2010–11 and beyond may also use a comparative score of 380 on SAT Math if it was earned prior to March 2016.



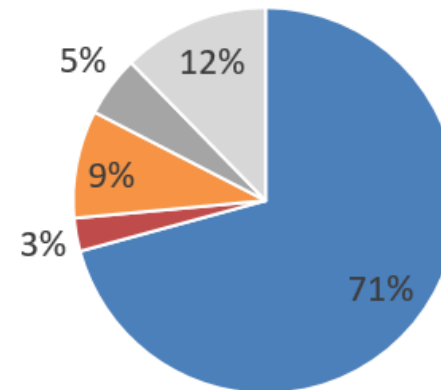
Math Graduation requirements & Concordant Scores

Algebra-Graduates 2018 Current



■ FSA ■ Waiver ■ PERT ■ Non-Grads

Algebra-Graduates 2018 Future

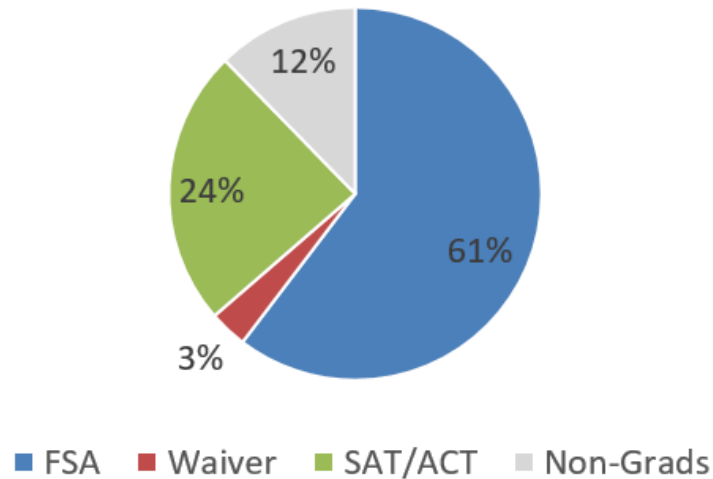


■ FSA ■ Waiver ■ SAT/ACT/PSAT ■ Not Meet Requirement ■ Non-Grads

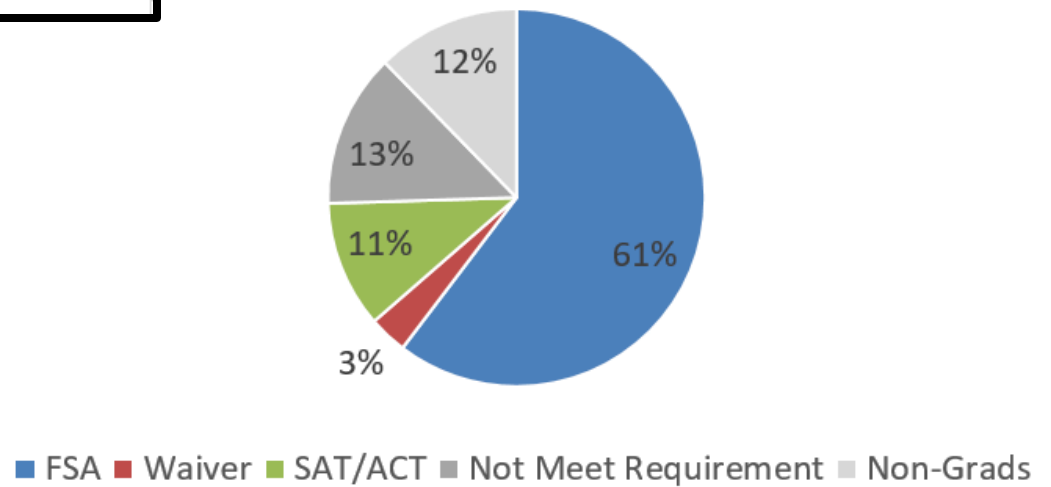


ELA Graduation requirements & Concordant Scores

ELA-Graduates 2018 Current



ELA-Graduates 2018 Future



Next Steps

- **SAT school day** being offered to all juniors, the PSAT to all sophomores and the PSAT 9 to all freshmen
- Providing all students with **Naviance** to monitor their readiness for graduation and explore post-graduation options
- Academic support through making **Khan Academy** available to students through the BCPS launch pad
- **Providing special courses, camps and interventions** for students that are struggling to pass the State exams on an as-needed basis.
- Broward Incentive Model for Learning Gains
- Legislative Platform
 - Include Data Literacy course to directory
 - Modify assessment to replicate the demands of today's workforce
 - Career ready scores added to HS Graduation



Appendix

Data Sets



Overall Scores

	2016	2017	2018	2019	16-19 change
Math Achievement %	55	59	59	60	5
Math Learning Gains %	53	58	57	58	5
Math Low 25 Gains %	43	47	47	48	5

Data Source: Data retrieved from Student Assessment & Research School Grades dashboard on 10/10/19. All data reflects Math Achievement, Math Learning Gains, and Math Low 25 Gains for Traditional BCPS schools only.



Proficiency, Math Learning Gains, & Low 25%

Third Grade

	2016	2017	2018	2019	16-19 change
Math Achievement %	62	63	64	67	5
Math Learning Gains %	82	83	85	86	4
Math Low 25 Gains %	80	83	86	86	6

Fourth Grade

Math Achievement %	59	66	65	69	10
Math Learning Gains %	58	65	62	68	10
Math Low 25 Gains %	39	50	44	49	10

Fifth Grade

Math Achievement %	59	61	64	66	7
Math Learning Gains %	59	64	61	67	8
Math Low 25 Gains %	47	50	46	53	6

Data Source: Data retrieved from Student Assessment & Research School Grades dashboard on 10/10/19. All data reflects Math Achievement, Math Learning Gains, and Math Low 25 Gains for Traditional BCPS schools only.



Proficiency, Math Learning Gains, & Low 25%

Sixth Grade

	2016	2017	2018	2019	16-19 change
Math Achievement %	52	55	55	57	5
Math Learning Gains %	46	47	44	46	0
Math Low 25 Gains %	37	38	35	39	2

Seventh Grade

Math Achievement %	57	59	59	58	1
Math Learning Gains %	61	64	62	60	-1
Math Low 25 Gains %	45	47	46	45	0

Eighth Grade

Math Achievement %	66	64	64	62	-4
Math Learning Gains %	70	70	67	64	-6
Math Low 25 Gains %	61	61	61	56	-5

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Proficiency, Math Learning Gains, & Low 25%

Ninth Grade

	2016	2017	2018	2019	16-19 change
Math Achievement %	59	71	66	67	8
Math Learning Gains %	42	47	44	44	2
Math Low 25 Gains %	38	43	43	40	2

Tenth Grade

Math Achievement %	42	51	42	43	1
Math Learning Gains %	41	51	47	50	9
Math Low 25 Gains %	42	44	46	52	10

Data Source: Data retrieved from Student Assessment & Research School Grades dashboard on 10/10/19. All data reflects Math Achievement, Math Learning Gains, and Math Low 25 Gains for Traditional BCPS schools only.



Proficiency, Math Learning Gains, & Low 25%

Algebra 1		2016	2017	2018	2019	16-19 Change
7 th Grade	Math Achievement	93	98	98	96	+3
	Math Learning Gains	74	80	78	72	-2
	Math Low 25 Gains %	-	-	-	-	-
8 th Grade	Math Achievement	92	92	93	88	-4
	Math Learning Gains	73	75	75	67	-5
	Math Low 25 Gains %	-	-	-	-	-
9 th Grade	Math Achievement	46	61	58	56	+10
	Math Learning Gains	33	41	41	40	+7
	Math Low 25 Gains %	35	41	41	37	+2
10 th Grade	Math Achievement	9	18	15	18	+9
	Math Learning Gains	40	39	37	46	+6
	Math Low 25 Gains %	46	42	42	49	+3

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Proficiency, Math Learning Gains, & Low 25%

Geometry		2016	2017	2018	2019	16-19 Change
8 th Grade	Math Achievement	96	97	97	97	+1
	Math Learning Gains	83	81	80	79	-4
	Math Low 25 Gains %	86	82	81	80	-6
9 th Grade	Math Achievement	81	84	81	85	+4
	Math Learning Gains	54	52	50	50	-4
	Math Low 25 Gains %	63	58	61	60	-3
10 th Grade	Math Achievement	51	64	63	64	+13
	Math Learning Gains	40	54	48	50	+10
	Math Low 25 Gains %	37	47	46	53	+16
11 th Grade	Math Achievement	20	35	26	19	-1
	Math Learning Gains	29	52	37	29	0
	Math Low 25 Gains %	31	53	39	33	+2

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