COMMON CORE STATE STANDARDS FOR MATHEMATICS
FOCUS, COHERENCE, RIGOR

• FOCUS – Developing deep conceptual understanding that lays the foundation for future learning

• COHERENCE – Building conceptual understanding over multiple years through research-based learning trajectories

• RIGOR – Balancing conceptual understanding (the ability to access concepts from multiple perspectives and apply them to new situations) with procedural skill and fluency

No longer means pushing content down into earlier grades
Which one doesn’t belong?
Justify your answer.
A rich math task takes time to solve and lends itself to collaboration and multiple perspectives. Robust use of these tasks creates the context in which students build multiple representations and communicate their reasoning.
FOCUS AND COHERENCE IN ALGEBRA

The intentional development of algebra in the CCSS-M spans all grades.
ALGEBRA IN 8\textsuperscript{TH} AND 9\textsuperscript{TH} GRADE

**Old CA Algebra 1**
- Proportional Relationships
- Linear Equations and Inequalities
- Systems of Equations
- Roots and Exponents
- Expressions and Polynomials
- Quadratic Equations and Functions

**CCSS Math 8**
- Proportional Relationships
- Linear Equations and Inequalities
- Systems of Equations
- Roots and Exponents
- Introduction to Functions
- Transformations and Congruence
- Angles and Parallel Lines
- Pythagorean Theorem
- Analyzing Graphs
- Bivariate Data

*(including projects and applications)*

**CCSS Algebra 1**
- Linear Equations, Inequalities, and Systems
- Expressions and Polynomials
- Quadratic Equations and Functions
- Modeling with Functions
- Interpreting and Building Functions
- Linear, Quadratic, and Exponential Models
- Categorical and Quantitative Data

*(including projects and applications)*
Percent of Students Maintaining Proficient Status
(start of 8th grade through end of 10th grade)

- All 8th graders enroll in Algebra 1.
- By end of 8th grade, less than half test proficient on Algebra 1 CST.
- By sophomore year, only one third are enrolled in Algebra 2 and take the CST.
- By end of sophomore year, less than one fourth test proficient on Algebra 2 CST.

Legend:
- Blue: All Students
- Red: African American
- Green: Latino
MOST RECENT MATCHED DATA, CLASS OF 2015

Following students who were in 8\textsuperscript{th} grade in 2011 and 10\textsuperscript{th} grade in 2013…

<table>
<thead>
<tr>
<th>Enrolled in Algebra 1 in 8\textsuperscript{th} grade</th>
<th>All Students</th>
<th>African American</th>
<th>Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,705</td>
<td>214</td>
<td>525</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enrolled in Algebra 2 in 10\textsuperscript{th} grade</th>
<th>All Students</th>
<th>African American</th>
<th>Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,112</td>
<td>35</td>
<td>96</td>
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</table>

<table>
<thead>
<tr>
<th>Tested Proficient on Algebra 2 CST</th>
<th>All Students</th>
<th>African American</th>
<th>Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>516</td>
<td>3</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
SFUSD SECONDARY MATH COURSE SEQUENCE

- CCSS Math 6 (6th Grade)
- CCSS Math 7 (7th Grade)
- CCSS Math 8 (8th Grade)
- CCSS Algebra 1 (9th Grade)
- CCSS Geometry (10th Grade)
- CCSS Algebra 2 (11th Grade)
- CCSS Algebra 2 + Precalculus Compression
  - Decision Point
- AP Calculus
- AP Statistics
- Precalculus

Decision Point
DISTRIBUTION OF STUDENTS  
8\textsuperscript{TH} GRADE PRE-ALGEBRA VS. 8\textsuperscript{TH} GRADE ALGEBRA 1  
(HS GRADUATION CLASSES 2008-2010)
REDEFINE IDEAS ABOUT WHAT IT MEANS TO DO MATH
SUPPORT AT SITES, BUILDING CAPACITY

• Preschool, Elementary and Middle Grades, site based work with teacher leaders and grade level teams

• Middle school additional supports include instructional coaching and a focus on educational technology, and reduced class size at 8th grade

• High school and middle grades course-based collaboration
WHAT IS THE CURRENT STATE OF OUR OUTREACH IN SFUSD?

- We regularly do parent events across our city, both at individual schools and within larger structures.
- We have been featured in major local media as well as national media: [http://www.sfusdmath.org/in-the-news.html](http://www.sfusdmath.org/in-the-news.html)
- We had 15 different presentations at conferences for 2015-2016, and continue to be sought out by colleagues in the math education community.
- [www.sfusdmath.org](http://www.sfusdmath.org) is a resource for the community, listed as exemplary by CDE. We have more than 7000 page views most weeks.
Galileo Academy of Science and Technology

**History**
- Built in 1920s and covers 2 city blocks
- Originally was school for Italian and Irish immigrants from North Beach and the Marina District

**Now**
- Very few students live within 10 blocks of school
- Most students take public transit
- Demographics are now very different
Comparing San Francisco Youth and the San Francisco Unified School District

- **Census Estimates**
  - Other: 28.7%
  - Asian: 60%
  - Latino: 20%
  - Black: 5%
  - White: 0%

- **Public School System**
  - Other: 12.9%
  - Asian: 60%
  - Latino: 20%
  - Black: 5%
  - White: 0%
Galileo Demographics

Ethnicity

- Asian/Asian-American: 57.5%
- Hispanic or Latino: 17.6%
- White
- Filipino/Filipino-American
- African American
- Multiple Races
- Pacific Islander
- Unknown
Math Detracking Success at Galileo

- Complex Instruction
- Heterogeneous Classes
- Co-Teaching Model
- Growth Mindset

Common Core
Migration to Heterogeneous Classes

● Stratified → Heterogeneous not “tracked” → “untracked” classes
  ○ Our heart was always in the right place
● Department-lead decision grappled with for years
● Key decision points
  ○ Stratified classes only helped some, not all
  ○ Lack of engaged and interactive student role models within booster classes
  ○ Inability to place students properly
  ○ Lack of Exposure to full curriculum
Math Co-Teaching Success

- **Special Ed students are mainstreamed**
- **Special Ed teachers are treated as math teachers**
  - Share teaching, planning and grading
  - Co-teachers share a common prep
  - Special ed co-teachers work with only one math teacher
- **Success is personality dependent**
  - Not all co-teachers matches have been successful
  - Openness and flexibility are key traits to success
Growth Mindset Adoption and Actions

- Participated in Stanford Study (PERTS) - 3 years ago
  - Whole math department professional development by PERTS - 2 years ago
- Math department Goal - last year
  - Used PERTS materials to conduct math dept PD
  - Gave PERTS mindset surveys to most 9th and 10th graders last year in October and May
- Whole Staff Growth Mindset PD - this year
  - Delivered by math department and PERTS
  - Follow up PD sessions planned for later this year
  - Gave PERTS mindset surveys to 9th graders the first week of school, will re-evaluate in May
Complex Instruction

- **Equity-focused teaching through groupwork**
  - Groupworthy tasks with multiple entry points
  - Group roles to reduce student status
  - Class and group norms
  - Multi-ability and assigning competence

- **Dovetails perfectly with Common Core standards**

- **Works seamlessly with Growth Mindset**

- **Galileo Staff training**
  - 13 teachers over the last 3 years
  - 7 last summer!
  - Provided significant rejuvenation to teaching practice
  - Firmly established working cohorts within dept
## SBAC Results

<table>
<thead>
<tr>
<th></th>
<th>2015-16 Proficient</th>
<th>% change</th>
<th>% above District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian/Asian-American (282)</td>
<td>73.0%</td>
<td>7.57%</td>
<td>-1.40%</td>
</tr>
<tr>
<td>Hispanic or Latino (62)</td>
<td>25.8%</td>
<td>15.81%</td>
<td>9.90%</td>
</tr>
<tr>
<td>White (15)</td>
<td>60.0%</td>
<td>24.71%</td>
<td>-3.70%</td>
</tr>
<tr>
<td>Filipino/Filipino-American (12)</td>
<td>25.0%</td>
<td>25.00%</td>
<td>-12.00%</td>
</tr>
<tr>
<td>African American (12)</td>
<td>16.7%</td>
<td>16.67%</td>
<td>6.40%</td>
</tr>
<tr>
<td>Multiple Races (5)</td>
<td>60.0%</td>
<td>10.00%</td>
<td>10.80%</td>
</tr>
<tr>
<td>Unknown (16)</td>
<td>68.8%</td>
<td>-6.25%</td>
<td>6.50%</td>
</tr>
<tr>
<td>Male</td>
<td>58.5%</td>
<td>5.70%</td>
<td>8.10%</td>
</tr>
<tr>
<td>Female</td>
<td>65.7%</td>
<td>11.90%</td>
<td>11.60%</td>
</tr>
<tr>
<td>ELL</td>
<td>36.8%</td>
<td>3.00%</td>
<td>15.10%</td>
</tr>
<tr>
<td>Redesignated</td>
<td>68.0%</td>
<td>6.24%</td>
<td>8.10%</td>
</tr>
<tr>
<td>SpEd</td>
<td>20.8%</td>
<td>8.38%</td>
<td>13.90%</td>
</tr>
<tr>
<td>Non SpEd</td>
<td>64.3%</td>
<td>11.74%</td>
<td>8.70%</td>
</tr>
<tr>
<td>Economically Disadvantaged</td>
<td>62.4%</td>
<td>10.37%</td>
<td>15.20%</td>
</tr>
<tr>
<td>Non-economically Disadvantaged</td>
<td>59.3%</td>
<td>0.52%</td>
<td>-0.20%</td>
</tr>
</tbody>
</table>
Department Chair Best Practices

● Caveats

● Building a collaborative, supportive team is critical

● Establish trust
  ○ Lead by doing
  ○ Have the teachers’ backs
  ○ Speak the truth, honestly and directly

● All major decisions are group decisions
  ○ I only act as a facilitator
  ○ Hiring process is a group process
  ○ Let the staff own the department
Goals Going Forward and Current Data
BOLD MATH GOALS

1. By 6/2018 we will have reduced the number of students needing to retake Algebra 1, Geometry, or Algebra 2 by 50% from numbers recorded for 6/2013. This goal will be true for the entire population of SFUSD students as well as each ethnicity. And;

2. By 6/2018 we will increase the number of students who take and pass 4th year math courses (post Algebra 2 courses) with a C or better by 10%. And;

3. By 6/2018 we will increase the number of Latino and African American students who take and pass Advanced Placement math courses by 20%.
SBAC DATA

Statewide Data

SFUSD Data

Galileo
SFUSD:
599 students, 10 schools

Comparison:
8629 students, 34 districts
www.sfusdmath.org

In the News

SFUSD moves beyond textbooks: Superintendent Carranza comments on how the new standards influence what student materials look like.

SFUSD outpaces state averages and other large CA cities on state tests. Read more in the SF Examiner: SFUSD at the head of the class.

Teachers learn from each other through the "Lesson Study" structure. KQED's Mind/Shift reports. Check out the Math

SFUSD Teachers

Click here for information about the SFUSD Interim District Assessments.

The Math Department is supporting all SFUSD schools through a variety of structures. Visit our Programs and Support page for more information!

SFUSD Core Curriculum

Find out more about accessing the curriculum:

SFUSD Employees; give us feedback about the Curriculum

Access the Curriculum  Curriculum Feedback

* Spotlight*

New research shows that doing a little math with your child every day, with the help from an app, can support math learning for kids and even math-phobic parents! from NPR

Our Vision

2015-16 Core Curriculum Implementation

Common Core State
Questions
THANK YOU!

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