

# SFUSD Mathematics Core Curriculum Implementation Plan

## A focused, coherent, and rigorous mathematics program for every student

The Common Core State Standards for Mathematics (CCSS-M) emphasize a balanced approach of conceptual understanding, procedural fluency, and problem solving. Implementation of the CCSS-M requires many shifts: from an emphasis on getting answers quickly to making sense of and persevering on challenging open-ended problems; from working in isolation to collaborating and critiquing each other's mathematical arguments; and from evaluating students by their standardized test scores to using performance tasks for formative assessment. Educators throughout the district have already begun to shift to this new vision of mathematics. Our work now is to scale up this vision and implementation to all schools.

Just as the CCSS-M define content and practice standards, successful implementation requires changes to both the materials and the pedagogy used in classrooms. The SFUSD Math Core Curriculum units provide the new materials, while professional development provided by the Curriculum and Instruction (C&I) Mathematics Department will provide the new pedagogy. The main structure for PD will be a **Teacher Leader** model, in which 2 to 4 teachers from each school site serve as a **Math Leadership Team** to collaboratively plan and organize site-based PD along with structured support from the C&I Mathematics Department.

The purpose of math PD is to build a shared, district-wide understanding of mathematics instruction and assessment that aligns with the CCSS-M, using the standards as both the catalyst and the vehicle for change. Teachers, site leaders, and district leaders must grapple with what rich mathematics looks like in the classroom, in student work, and in curriculum and assessments. This learning is ongoing. A successful effort requires a shift in culture at the classroom, site, and district level to support continued, collaborative inquiry and growth.

While all schools will receive baseline support starting in Spring 2014, focused PD support will be done in waves, reaching all SFUSD schools over three years. Focused support for first year implementation will center on middle and K–8 schools. There are several reasons for focusing on Grades 6–8 in the first year of implementation:

- Middle school content standards contain mathematics that teachers may not have taught before, such as transformational geometry, functions, and statistics.
- With the shift of Algebra 1 from Grade 8 to Grade 9, middle school teachers must help all students master the new rigorous standards in heterogeneous classes.
- The weight and content of the 8<sup>th</sup> Grade Algebra CST have pushed many middle schools to prioritize skills over understanding and to use textbooks that are procedural and pedagogically distant from the Standards for Mathematical Practice.

## **Implementation Goals**

These are the goals for site implementation of the SFUSD Math Core Curriculum. The PD and other support that Teacher Leaders and sites receive from the C&I Mathematics Department are based on these goals.

### **Goal 1: Plan using the new SFUSD Math Core Curriculum.**

- Meet as a grade-level team at the start of each new unit to discuss the Big Idea, Unit Objectives, Unit Description, Content Standards, and Progression.
- Develop lesson plans based on the new SFUSD Scope and Sequence, Core Curriculum units, and Mathematics Teaching Toolkit.

**Measure of Success: Grade-level meeting notes, lesson plans**

### **Goal 2: Promote student discourse and reasoning.**

- Provide opportunities for all students to collaborate on the math tasks in the Core Curriculum units.
- Allow students to struggle with problems productively and construct mathematical ideas with their peers.
- Use strategies described in the Core Curriculum units and Mathematics Teaching Toolkit that promote the Standards for Mathematical Practice.

**Measure of Success: Student work, principal or peer visits**

### **Goal 3: Collaborate regularly with peers to build a professional learning community.**

- Meet regularly with grade-level colleagues to work toward understanding of the CCSS-M content and practice standards and to plan collaboratively.
- Meet as a site throughout the year to analyze student work, identify common mathematical understanding and misconceptions, and reflect upon strategies to address them.
- Promote collaborative discussion around formative assessment using student work from the Core Curriculum math tasks and Common Learning Assessments (CLAs). All CLA components, including constructed response questions and performance tasks, should be entered into the Amplify data management system for use as evidence in these discussions.

**Measure of Success: Grade-level meeting notes, faculty meeting agendas, CLA data on the Amplify data management system**

## Support Overview

This table provides an overview of the different structures available to support Math Teacher Leaders during the school year. In addition, Teacher Leaders will attend a 3-Day Summer Institute August 6 - 8.

	<b>Elementary Schools and Elementary teachers at K-8 schools</b>	<b>Standards Schools (Focus)</b>	<b>Comprehensive Middle Schools and Middle School Teachers at K – 8 Schools (Focus)</b>	<b>High Schools</b>	<b>Mission and Bayview Zone Schools</b>
<b>Teacher Leader PD Structure</b> (not including Summer PD)	<ul style="list-style-type: none"> <li>• 3 release days (or Saturdays)</li> <li>– or –</li> <li>• 6 after-school meetings: 3 pairs of Thursday meetings one week apart.</li> </ul>	<ul style="list-style-type: none"> <li>• 3 release days (or Saturdays)</li> <li>– or –</li> <li>• 6 after-school meetings: 3 pairs of Thursday meetings one week apart.</li> </ul>	<ul style="list-style-type: none"> <li>• 6 release days</li> <li>– or –</li> <li>• Complex Instruction: Program requires 11 PD days (7 in the summer, 4 during the year) for coursework and collaborative planning, as well as a minimum of 4 after-school sessions. See pages 6 and 8 for details.</li> <li>SEE ADDITIONAL NOTES BELOW</li> </ul>	<ul style="list-style-type: none"> <li>• 3 release days</li> <li>– or –</li> <li>• Complex Instruction: Only for high schools that are already involved in the CI program and have a majority of math teachers that have gone through CI coursework.</li> </ul>	<ul style="list-style-type: none"> <li>• 3 release days (or Saturdays)</li> <li>– or –</li> <li>• 6 after-school meetings: 3 pairs of Thursday meetings one week apart.</li> <li>– or –</li> <li>• Complex Instruction: Only for middle schools, 6–8 teachers in K–8 schools, or high schools already involved in CI.</li> </ul>
Who makes PD model choice?	Principal with TL Team	Principal with TL Team	Principal with Math Department	Principal with Math Department	Principal with TL Team
Site learning for all math teachers	August PD Day, Monthly collaboration	August PD Day, Monthly collaboration, 12 additional sub days for the site to use in the service of peer learning, such as peer observation or lesson study	August PD Day and possible January PD Day, Collaboration once every two weeks	August PD Day, 3 Follow-up planning days, Monthly collaboration	August PD Day, Monthly Thursday early release dedicated to math planning at site or central math PD within zone, as designed with the Assistant Superintendent
<p><b>Additional Notes for Comprehensive Middle Schools and Middle School Teachers at K – 8 Schools (Focus):</b></p> <ul style="list-style-type: none"> <li>• NOTE: Middle school math leadership will include content from the Mayor’s Middle School Leadership Initiative (“The iPad Project”)</li> <li>• NOTE: PD structures will allow 6–8 teachers in each K–8 school to collaborate with their grade-level colleagues at a nearby comprehensive middle school.</li> </ul>					

## Elementary Schools, Elementary Teachers from K – 8 Schools, and Standards Schools

All elementary teachers will implement the SFUSD Math Core Curriculum units in 2014–2015. Elementary math PD will use the Core Curriculum units as the vehicle for professional development with rich math tasks as the lever for instructional change. The C&I Mathematics Department will support the implementation through training site Teacher Leaders to help them work with their school-site peers. Teacher Leaders will receive PD at a 1-day Spring Orientation, a 3-day Summer Institute (August 6–8), and three daylong Leadership PD Days during the school year.

Teacher Leaders will serve as a **Math Leadership Team** at their site to facilitate shared learning by planning monthly site collaboration days. They will foster understanding of pedagogical structures that support implementation of the Standards for Mathematical Practice and facilitate discussions about the development of mathematical concepts in the units. Teacher Leaders will be paid at the agreed-upon hourly rate for time beyond the contractual day for up to 18 hours during the year, which amounts to approximately \$500.

	Spring Orientation	Summer Institute	August PD Day	Math Leadership PD Days	Monthly Site Collaboration
<b>Participants</b>	TL	TL	All	TL	All
<b>Days</b>	1	3	1	3 (or 6 after-school meetings)	1 hour/month

TL = Teacher Leaders at the site

All = All teachers at the site

Beyond the structures named above, schools who have participated in the **Standards Schools** professional development will have access to an additional 12 total sub days for the site to use in the service of peer learning, such as peer observation or lesson study. Each site will design the use of those days in order to best extend the mathematics learning begun in the 2012-13 and 2013-14 school years. In order to access this additional support, the school will describe in writing how they will design and leverage this additional on-site teacher release.

## Middle Schools and Middle School Teachers from K – 8 Schools: Collaborative Math Leadership Model

All middle school math teachers will implement the SFUSD Math Core Curriculum units in 2014–2015. Middle school math PD will use the Core Curriculum units as the vehicle for professional development with rich math tasks as the lever for instructional change. Middle schools have a choice between two PD support models: a **Collaborative Math Leadership** model in which Teacher Leaders receive 6 release days and a designated C&I Mathematics content specialist to support the Math Leadership Team; and a **Complex Instruction (CI)** model in which two-thirds or more of the math teachers are willing to participate in CI coursework and collaboration structures. In both models, Teacher Leaders (called Teacher Facilitators in the CI model) serve as a Math Leadership Team at their site to facilitate shared learning by planning site collaboration days.

In the **Collaborative Math Leadership** model, Teacher Leaders will receive leadership PD 6 times per year and a designated C&I Mathematics content specialist for collaborative planning and coaching. The Mathematics content specialist will meet periodically with the Math Leadership Team at their site for PD planning and identifying teams or individual teachers that would most benefit from coaching. Teacher Leaders will be paid at the agreed-upon hourly rate for time beyond the contractual day for up to 18 hours during the year, which amounts to approximately \$500.

In addition to the August PD Day that serves to launch the implementation for the Fall semester, middle school math departments will have access to a January PD Day (date will vary by site) to kick off the implementation for the Spring semester. During the year, site-based collaboration for teachers at middle schools will occur once every two weeks during Common Planning Time. K–8 schools will be paired with middle schools in close geographic proximity to support teachers of Grades 6–8, who will participate in the site collaboration meetings at the comprehensive middle school.

	Spring Orientation	Summer Institute	August PD Day	Math Leadership PD Days	Possible January PD Day	Twice Monthly Site Collaboration	Monthly Site Team Coaching with C&I TSA
<b>Participants</b>	TL	TL	All	TL	All	All	TL, teacher teams, or individual teachers
<b>Days</b>	1	3	1	6	1	2 hours/month	4+ hours/month

TL = Teacher Leaders at the site

All = All teachers at the site

## Middle Schools: Complex Instruction Model

A more intensive option is available to middle schools in which at least two-thirds of the math teachers are willing to participate in a **Complex Instruction** (CI) program that builds on the work begun in a number of SFUSD high schools. This model allows for deep reflection on teaching practices and student learning, development of new pedagogical knowledge and skills, and collaborative planning around the Core Curriculum. The description and requirements of the CI program are described in more detail on page 8.

CI training requires a commitment to completing a 5-day summer course and 2 follow-up days, participating in 4 collaborative planning days with the SFUSD CI community, and a willingness to be observed in the classroom and coached (see page 8 for exact dates). Teachers at CI schools who choose not to complete the CI coursework will still participate with their peers in the CI Collaborative Planning Days, which will focus on planning with the new Core Curriculum units.

In CI schools, Teacher Facilitators serve as the Math Leadership Team and facilitate the shared learning at their sites by planning site collaboration days. Teacher Facilitators will not participate in the Summer Institute and Math Leadership PD Days because of the time they commit to other CI structures, including CI Collaborative Planning Days, monthly CI Teacher Facilitator meetings, and Video Club meetings. Teacher Facilitators will be paid at the agreed-upon hourly rate for time beyond the contractual day.

	Spring Orientation	CI Coursework	CI Collaborative Planning Days	August PD Day	CI Teacher Facilitator Meetings	Video Club (Quarterly)	Twice Monthly Site Collaboration	Monthly Site Team Coaching with C&I TSA
<b>Participants</b>	TF	New CI	All	All	TF	All CI	All	TF, teacher teams, or individual teachers
<b>Days</b>	1	7 5 – Summer 2 – Fall/Spring	4 2 – Summer 2 – Spring	1	12 hours/year	8 hours/year	2 hours/month	4+ hours/month

TF = CI Teacher Facilitators at the site (serve as Teacher Leaders)

All = All teachers at the site

New CI = Teachers new to the CI program at the site

All CI = All CI teachers at the site

## High Schools

All high school math teachers will implement the SFUSD Math Core Curriculum units in 2014–2015. High school math PD will use the Core Curriculum units as the vehicle for professional development with rich math tasks as the lever for instructional change. The C&I Mathematics Department will support the implementation through PD and training of site Teacher Leaders to help them work with their school-site peers. In addition to the 3-day Summer Institute, Teacher Leaders will attend 3 Leadership PD Days during the year and receive the support of a C&I Mathematics content specialist for collaborative planning and coaching.

Teacher Leaders will serve as a **Math Leadership Team** at their site to facilitate shared learning by planning site collaboration days. In addition to the August PD Day and monthly site-based collaboration, all high school math teachers will receive 3 off-site PD Days that follow the Math Leadership PD Days (dates will vary by site) in order to delve deeply into the Core Curriculum units, make sense of major content shifts, and plan collaboratively with their departments. Teacher Leaders will be paid at the agreed-upon hourly rate for time beyond the contractual day for up to 18 hours during the year, which amounts to approximately \$500.

High schools that are currently part of the **Complex Instruction** program and who have a majority of teachers that have already completed the CI Coursework will continue to use the CI model as described in the middle school section (see page 6). New high schools will not be added to the CI program in the first year of implementation.

	<b>Spring Orientation</b>	<b>Summer Institute</b>	<b>August PD Day</b>	<b>Math Leadership PD Days</b>	<b>Follow-up Planning Days</b>	<b>Monthly Site Collaboration</b>
<b>Participants</b>	TL	TL	All	TL	All	All
<b>Days</b>	1	3	1	3	3	2 hours/month

TL = Teacher Leaders at the site

All = All teachers at the site

## Complex Instruction Model: Description and Requirements

The C&I STEM Department has the capacity to accept four new middle schools (plus Grade 6–8 teachers in partnering K–8 schools) into the CI program. Participants will learn the principles and practices of CI, an effective group-based pedagogy grounded in research. Participants will gain tools and strategies that work towards providing ALL students—regardless of their ethnic, language, socio-economic, or achievement backgrounds—equal-status participation in small groups and accountability for learning rigorous mathematics. **New CI participants** will:

- Consider the impact of teachers’ beliefs as they shape students’ beliefs about mathematics, learning, and participation, and reframe issues of ‘smartness’ in school mathematics.
- Receive support in implementing the SFUSD Math Core Curriculum aligned to the CCSS-M.
- Learn strategies to promote equal-status participation within small groups.
- Begin to examine how to assess students’ mathematical understanding in the context of cooperative group work.
- Identify/develop group-worthy tasks from their curricular materials.
- Create and present a lesson that includes a group-worthy task.

By joining CI, teachers are committing to become part of a community of learners whose goal is to improve teacher practice in order to diminish the predictive power of demographics. CI is about “good teaching” and this opportunity focuses specifically on the math classroom. The effort it takes to attain this goal of equity requires that all participants work as a team and learn from each other. Each school’s math department’s commitment and active participation will support teachers’ continual professional growth and is critical for building the school team and the district wide community of practice.

The following is the professional development series for 2014-15:

- 5-day Summer Course (**July 28–August 1**) and 2 Course Follow-up Days (dates TBD) – **required for new CI teachers**
- 4 Collaborative Planning Days (**August 4–5**, other two dates TBD) – **required for all math teachers at CI schools**
- 4–8 coaching sessions throughout the year, including support for curricular or planning teams
- 4 after-school Video Club sessions
- Monthly Teacher Facilitator meetings
- Monthly site planning time dedicated to implementing the CCSS-M led by Teacher Facilitators

Teachers will be paid at the agreed upon hourly rate for each summer day and any formal sessions outside the teaching day.

Interested schools must have two-thirds of their math department commit to participating in the professional development series and the other one-third committed to participating in CI Collaborative Planning Days and monthly site collaboration.

Middle schools joining this initiative for 2014 – 15 have already been identified, and have begun the initial planning for the year.