

Vision for Mathematics Instruction in Sunnyvale School District

“The value of a problem is not so much coming up with the answer as in the ideas and attempted ideas it forces on the would-be solver.”

-Israel Nathan Herstein

Our shared commitment in the Sunnyvale School District is to provide mathematics education that actively engages students in learning experiences that stimulate curiosity, inquiry, joy and a deep understanding of the mathematics. Students receive classroom instruction that is rigorous, focused, and balances conceptual understanding with procedural skills, and real-life applications. The instructional practices empower students to collaborate, communicate, inquire, think critically and solve problems, with supports for diverse learners. Instruction is guided by data from formative and summative assessments.

We provide math instruction that teaches students to:

- Engage in rich problem solving
- Build conceptual knowledge
- Participate in productive discourse about their thinking and reasoning
- Build fluency through conceptual understanding
- Engage in the “productive struggle” that helps build students’ perseverance and grit

In a mathematics classroom:

Students are...	Teachers are...	Instructional leaders are...
<ul style="list-style-type: none"> ○ Using a variety of strategies, including models, to explain solutions and problem-solving processes ○ Making conjectures and explaining their thinking both orally and in writing ○ Responding to peers’ ideas, offering opinions and justification ○ Engaging in rigorous activities with time to explore, struggle, and make sense of the ideas ○ Gathering and analyzing data ○ Working collaboratively with peers ○ Applying growth mindset strategies, including positive self-talk; e.g. “I know I can do it if I keep trying” 	<ul style="list-style-type: none"> ○ Asking students questions that require them to prove their solution (e.g. “How did you know?” “Explain your thinking.”) ○ Modeling and scaffolding to support productive and respectful mathematical discourse ○ Creating rich and rigorous tasks that allow various access points (low floor, high ceiling tasks) ○ Ensuring equity of student voice ○ Adjusting instruction based on observation and data to respond to student needs ○ Explicitly teaching students about growth mindset and the value of mistakes in learning. 	<ul style="list-style-type: none"> ○ Consistently communicating with families about activities and resources to extend learning ○ Providing teachers with timely and effective feedback to inform instruction and planning ○ Supporting teachers with time and resources to collaborate, deepen practice, and plan instruction by utilizing research based instructional strategies ○ Building connections within the wider community to support student learning and family engagement ○ Facilitating ongoing conversations to analyze data and its impact on instruction

Key Instructional Practices in Math

- Establishing learning objectives to focus learning outcomes for students.
- Implementing tasks that promote reasoning and problem solving
- Creating a language rich math classroom (vocabulary, terms, explanations, and sentence frames) to support meaningful mathematical discourse.
- Activating background knowledge
- Engaging in whole class mini-lessons to build conceptual understanding
- Using small group math instruction and cooperative learning strategies to differentiate instruction based on student need.
- Utilizing regular, ongoing formative assessment to drive and refine instruction
- Using and connecting mathematical representations to deepen understanding of math
- Fostering visualization by using tools, manipulatives, and models as the basis of constructing math meaning.
- Reinforcing number sense and fluency development through games and the use of Math Talks (such as Dot Talks, Number Talks, and Number Strings)