K-12 Mathematics Vision

College-and-Career Ready Mathematics Students

…have the knowledge, skills, and perseverance to 1) construct meaning and develop deep understanding of rigorous and engaging material, 2) effectively and readily articulate insightful ideas, arguments, questions and results about complex mathematical tasks, orally and in writing, and 3) draw on knowledge from a wide variety of mathematical topics, sometimes approaching the same problem from different mathematical perspectives or represent the mathematics in different ways until they find methods that enable them to make progress.

Student Outcomes

Students…

- **UNDERSTAND** their challenge and are intent on attending to it.
- **MAKE** connections to previous knowledge, skills and understanding, including the application of problem solving skills to real-world contexts..
- **QUESTION** each other.
- **EXHIBIT** perseverance while independently thinking.
- **JUSTIFY** arguments by explaining the how and the why.
- **CONTRIBUTE** consistently to a positive, supportive atmosphere.
- **ARE** comfortable making mistakes, critiquing and questioning each other, and analyzing errors.
- **ARE** thinking about efficiency and naturally wonder about generalizations.
- **BUILD** on one another's strategies/thinking and generate and defend arguments.
- **BUILD** foundational mathematics skills
- **SHOW** an increase in accuracy, sophistication and depth of understanding within their work products.
- **UNDERSTAND** how mathematical concepts relate to and build off of one another in order to apply strategies across mathematical content areas.
- **USE** tools to explore and deepen their understanding of concepts.
- **CALCULATE** accurately and efficiently, and express numerical answers with a degree of precision appropriate for the problem context.
- **LOOK** closely to discern a pattern or structure.
- **CONTINUALLY** evaluate and re-check work for accuracy and establish whether the answer is logical based on the context of the problems.

Teacher Actions

Teachers…

- **PROVIDE** individual think time, which enables access and promotes productive contributions during group work.
- **REINFORCE** foundational mathematics skills
- **PURPOSEFULLY** model problem solving and prompt students to talk about each other's explanations.
- **ARE** comfortable with planning for and monitoring problem-centered, collaborative classrooms.
- **PURPOSEFULLY** monitor and select students to share their learning with the class.
- **PURPOSEFULLY** highlight real world applications/connections to make learning relevant, engaging, and authentic.
- **Prompt** students to share their reasoning and make their thinking public.
- **ANTICIPATE**, provide examples of, and have students share common misconceptions, when appropriate.
- **CREATE** a culture that fosters curiosity and engagement with the topic/skill, which is reflected both in terms of the questions students pose to one another, but also questions they think of independently.
- **SUPPORT** groups and individuals by asking questions, giving hints, providing encouragement, and modeling specific group roles to help groups collaborate more effectively.
- **MODEL**, require and praise accurate usage of academic and content specific vocabulary.
- **MODEL** how to make connections between mathematical concepts and how they are related.