DOINGWHATWORKS

Terman Middle School

655 Arastradero Road
Palo Alto, CA 94306
Principal: Carmen Giedt

At Terman Middle School, Paul Jorgens, who is featured on the DWW site, teaches both the Introductory Algebra and Algebra I courses. In the Introductory course students are building skills with integers, fractions, and graphing. The students have some areas of arithmetic they are still working on, so those skills are taught concurrently while addressing the algebra standards. At the end of the year all Introductory Algebra students are tested on the state algebra standards.

- Middle School (6-8)
- 46% White
- 30% Asian
- 8% Hispanic
- 3% Black
- 14% Multi-racial/No Response
- 9% Free or Reduced-Price Lunch
- 2% English Language Learners

Jorgens' approach involves teaching algebra concepts and skills while carefully "staging" and scaffolding the arithmetic skills involved, beginning with whole numbers, then moving to negative numbers, and then fractions. Jorgens gives an example of his reasoning: "Are they struggling because of the slope formula or are they struggling because of the numbers? …sometimes I've found it is best to start with the whole numbers and see if they can do slope with the positive whole numbers. Then if they can do that, then I can see if the problem is with the negatives or with other aspects of understanding slope. If I don't do that I can't diagnose where's the struggle. They're not getting the right answer, and they're not getting good feedback about where their struggle is, and so I've learned that instead of starting with [simple algebra concepts] and making them more complex better to start with the concept and use whole numbers first—build in negatives and fractions later."

Jorgens identifies fractions and graphing as two areas that represent difficult skills for eighth graders that require lots of varied practice throughout the year. He believes it is very important for students to learn to speak and write with an algebraic vocabulary ("develop the language of algebra"), so he plans lessons that require pairs and groups of students to work together finding and discussing solutions.

Support teachers, tutors, and a classroom aide are all available at Terman to provide additional practice for students under Jorgens' direction. He has observed that Introductory Algebra students frequently start to catch on to algebra concepts and make progress quickly; he then differentiates by giving them different homework problems or asking them to do more in a problem-solving context so that they can move ahead. In those cases, he reduces some of the work where they don't need the extra practice and replaces it with work that is problem solving, symbolic, or algebraic in nature.

In contrast to Introductory Algebra, the Algebra I course provides more opportunities for problem solving, applications, and extensions into geometry. Students in Algebra I already have an understanding of linear equations; in the course they focus on quadratics, exponentials, and rational expressions.

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