Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
2007 Volume IV: The Science of Natural Disasters

Modeling Natural Disasters with Mathematical Functions

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This unit is designed for New Haven high school math students in an Algebra 1, Algebra 2, or Precalculus course. The intention is to increase the relevance of the topics of applications of mathematical functions and models through incorporating the spectacular scientific topic of natural disasters.

By relating these mathematical topics with such things as tsunami, volcanoes, earthquakes, tornadoes, and population growth, teachers may spark the interest of students otherwise uninterested in the subject of mathematics. By applying mathematical topics to problems outside the traditional applications problems, and by unifying these applications problems with a common theme that can be carried between one lesson and another, students may have a much greater appreciation of the power of both mathematics to model and describe nature, as well as the raw power of nature itself.

The lessons of this unit have been designed so that they are independent of one another and may be used in the context of another unit covering similar objectives and having covered the same prerequisite skills and concepts. Also, they need not be taught in any particular sequence. Two themes or major concepts embedded in this unit are dimensional analysis and mathematical models.

(Developed for Algebra I, grade 9; recommended for Mathematics, Algebra I, grade 9; Algebra 2, grade 11; and Pre-Calculus, grades 11-12)