



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
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Less is More: Realizing Mathematics through Architecture

Guide for Curriculum Unit 06.04.05
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The purpose of this unit is to introduce and integrate architecture as a study subject in the math curriculum for high school grade levels within the New Haven Public School system. This proposal cites specific goals and objectives that will enable students to respond to a series of sequential assignments, culminating and terminating in one or more definitions of a geodesic dome and its components. Unlike the architectural construction of a traditional dome, which has a very long and robust history, geodesic domes are relatively new. The first geodesic dome was built by Dr. Walter Bauersfeld in 1922, followed by Buckminster Fuller who obtained his first patent for geodesic domes in 1951 (see patent number 2,682,235). While geodesic domes make excellent buildings, their characteristics rely upon numerous mathematical definitions. Also, while they are inexpensive, strong, easy to assemble and easy to tear down, they can also be built at one site and transported elsewhere. These domes can provide temporary and/or emergency shelters as well as permanently-stable, long-term buildings.

The characteristics of geodesic domes are also well-suited for outer space, beyond this atmosphere, on other planets, or leagues beneath the sea. Perhaps geodesic domes will be manufactured on an assembly-line like airplanes or automobiles; and in sufficient numbers so that everyone in the world could afford a geodesic dome for a home. At present, this unit addresses and presents the mathematical concepts and definitions that are geodesic-implicit. The lesson plans identify: goals; objectives; vocabulary; and assessments recommended for Mathematics, grades 9-12.

(Recommended for Algebra, Geometry, Trigonometry, and Calculus, grades 9-12.)

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