



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
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## **Algebra in Elementary Astronomy and Space Science**

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The goal of this unit is to create an interdisciplinary approach for some elementary astronomy and algebra skills to make learning algebra more interesting, as well as, to get students to understand and learn that algebra is truly used in a variety of subjects and real-world situations. By the topics being linked together, it should encourage students to become personally involved in understanding open-ended astronomy and algebra investigations. The unit is developed for an eighth grade Introduction to Algebra and Algebra I class. The approach of an interdisciplinary unit is to make learning algebra interesting through astronomy.

The mathematics objectives that will be taught in this unit are powers of ten, perfect squares, perfect cubes, writing numbers in exponential form, writing exponential numbers in expansion form, converting numbers to scientific notation, converting scientific notation to a number, multiplying and dividing numbers in scientific notation, adding and subtracting with scientific notation, solving equations, substitutions, speed, distance, density, units of measurements, converting units, and determining ratios.

The astronomy topics that will be taught are temperature scales, light years, astronomical units, velocity, density, Newton's Laws of Motion, Kepler's Laws of Planetary Motion, and The Doppler Effect.

(Developed for Algebra I, grade 7; recommended for Introduction to Algebra and Algebra I, grades 7-8)

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