



Curriculum Units by Fellows of the National Initiative  
2011 Volume VI: Great Ideas of Primary Mathematics

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## **Exponential Explosion: Analyzing Scientific Notation and Its Application to Astronomy and Order of Magnitude**

Guide for Curriculum Unit 11.06.05, published September 2011  
by Troy Julian Holiday

The unit centers on providing students with the tool sets to understand the purpose and concepts of scientific notation. This will be done with students engaging in the practice of the notation in terms relevant to their own lives. The objectives of the unit are to open student's minds to the many applications of scientific notation and break down its underlying meaning. If students are able to achieve those objectives, they will be prepared for more advanced applications of scientific notation and the processes that follow it.

To obtain those objectives students must engage in the practice of scientific notation often. The best practice for them to have are real-world examples that utilize scientific notation in a variety of ways. This will encourage them to sustain their motivation throughout the unit offering an environment conducive for learning. The examples themselves will assist with students understanding of the applications of scientific notation, but only repetition of the process will facilitate the students understanding of what the notation represents. Through many examples and much practice, students will come to understand how scientific notation is an excellent way to accurately represent values very big, and very small.

(Developed for Astronomy, grade 6; recommended for Astronomy, Middle School grades; Exponential Notation and Arithmetic, all grades; Chemistry, High School grades; and General Science, Middle and High School grades)

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