



Curriculum Units by Fellows of the National Initiative  
2018 Volume IV: Big Numbers, Small Numbers

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## **Exploring the Metric System and EM Spectrum Through Base Ten Numeration**

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by Zachary J Meyers

The scale of the known universe is truly immense, from quantum level interactions that affect molecular affinities to collision of whole galaxies. Scientists have utilized the base ten numeral system for hundreds of years to accurately represent quantities; from the distances between particles in an atom to the energy output of a quasar. Many students struggle with contextualizing content and the related quantities associated with cosmic energy outputs and extreme distances in physics. The electromagnetic spectrum provides the necessary context to integrate the concept of scale and refine skills of scientific notation due to the inherent inverse relationships between wavelength and frequency. This 3 - 4 week unit is designed to elevate high school students' conceptual understanding of several interdisciplinary concepts (i.e., scale, units, and scientific notation) during first and thirds advisory by solving problem sets, conducting inquiry activities using the metric system, and comparing datasets related to wavelength, frequency, and energy.

(Developed for Physics, grades 11-12; recommended for Physics, grades 11-12)

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