

**Now you see it, now you don't: A unit to support eighth grade conceptualizations of size and scale through scientific notation applied to optics and light along the electromagnetic spectrum**

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**Synopsis**

As learners work to conceptualize size and scale beyond points of reference in lived or physical experiences, notation, or the way that quantities are expressed, could hold an important cognitive key. Eighth graders are introduced to the topic of scientific notation through their mathematics courses, but understanding of scale in very large and very small numbers has implications in their future work in mathematics, science, technical careers, and navigating today's natural and technological world. To support students to develop reasoning about quantity that is lasting, meaningful context, relative reasoning, and visualization will be key.

This unit strives to help students “see” scientific notation around them through explicit connections to the field of optics woven with the conceptual approaches of the Illustrative Mathematics curriculum. By leveraging optics concepts such as the speed of light as well as the measurement of the wavelengths, students will develop intuition around large and small numbers that help them to describe both the visible and invisible world. International Baccalaureate assessment criteria and global contexts provide frameworks that emphasize applications to the real world in the mathematics of this unit.