

Unit Guide

Why We Need Logarithms: From Early Navigation to Nuclear Meltdown

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Since today's students have grown up using calculators, they have little experience performing long calculations with large numbers. This curriculum unit is written to give high school math students a historical background of logarithms so that they will better understand their usefulness and the justification for their properties. I pose problems with the ultimate goal of students truly understanding that logarithms are exponents of a specific base rather than a definition from a textbook. Once students internalize the idea that logarithms are exponents, they will be better prepared to connect the properties of logarithms to the laws of exponents they have already studied. In this curriculum unit, students also use inverse relationships to solve exponential and logarithmic equations. They apply Polya's four steps for problem solving to answer real questions that can be solved most efficiently with the use of logarithms. These questions relate to nuclear power plant disasters, drug testing, carbon dating, and determining time-of-death based on the cooling rate of a corpse, as seen on crime scene television.