Order of Magnitude Encyclopedia Article

Order of Magnitude

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Order of Magnitude

A mathematical term used loosely to indicate tenfold differences between values. This concept is crucial to interpreting logarithmic scales such as **pH** or **earthquake** magnitude, where each number differs by a factor of 10, and two numbers differ by a factor of 100 (10 times 10). For example, a pH of 4 is 100 times as acidic as a pH of 6 because they differ by two orders of magnitude. Scientists often generalize with this term; for example "our ability to measure pollutants has improved by several orders of magnitude" means that whereas before we were able to measure **parts per million** (ppm), we can now measure **parts per billion** (ppb).