

#education

#physics

#math

Title:

Estimation, Limiting Cases, and Orders of Magnitude

Purpose:

The purpose of this course is to give students a chance to specifically practice skills that are often assumed or taught on the fly in later courses but that are nevertheless extremely important to students' success.

Length:

7 weeks

Topics:

- Units and Orders of Magnitude
 - Practicing fluency with unit conversion, especially with units that are not commonly used.
 - Practicing fluency with orders of magnitude.
 - Introducing and practicing the method of "dimensional analysis"
- Reading Complicated Equations
 - Emphasizing that equations are difficult to read compared to regular sentences and that it is normal to have a mental block in the face of equations.
 - The term-wise approach
 - Practicing deriving rough equations for everyday phenomena
- Limiting Cases and other Verification Techniques
 - Using limiting cases to disqualify equations
 - Using limiting cases to derive equations
- Approximation and Estimation Techniques
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