



Curriculum Units by Fellows of the National Initiative

2017 Volume V: From Arithmetic to Algebra: Variables, Word Problems, Fractions and the Rules

Exploring Kinematic Proportional Relationships

Guide for Curriculum Unit 17.05.10, published September 2017

by Zachary Meyers

Physics for many is an intimidating mixture of contemplation and critical thinking about everyday phenomena. Students in particular are often overwhelmed with its multifaceted nature and the complexity involved even with simple motion. Kinematics offers an approachable platform to connect the inherent relationships between mathematics and physics by strengthening students' understandings of proportional relationships describing motion. This four-week unit seeks to explore multiplicative comparisons and ratios in topics ranging from base unit conversion to constant rates of motion. Students in 10th, 11th, and 12th grades will conduct multiple investigations where data will be collected and analyzed to enhance connections between mathematics and physics. In addition, inquiry activities coupled with discussion will provide context and opportunities for students to visualize and refine their conception of common physical phenomena. It is my hope that this unit will motivate students to think critically about their physical environment, prompt active discussions based on their observations, and elevate their mastery in both mathematics and physical science.

(Developed for Physics, grade 11; recommended for Physics and Math, grades 10-12)

<https://teachers.yale.edu>

©2023 by the Yale-New Haven Teachers Institute, Yale University, All Rights Reserved. Yale National Initiative®, Yale-New Haven Teachers Institute®, On Common Ground®, and League of Teachers Institutes® are registered trademarks of Yale University.

For terms of use visit https://teachers.yale.edu/terms_of_use