

Physics: Learning Objectives

Kinematics: Two-Dimensional Motion

1. Distinguish between vector and scalar quantities and provide examples of each.
2. Describe the properties of vectors and apply vector operations correctly.
3. Identify and draw coordinates systems for two-dimensional motion.
4. Distinguish between vector composition and vector resolution.
5. Apply graphical and mathematical methods to determine resultant vectors using the Pythagorean Theorem and trigonometric functions.
6. Use the Pythagorean Theorem and trigonometry to resolve vectors into their components.
7. Describe and analyze features of projectile motion.
8. Resolve vectors into components and apply the kinematic equations of motion to analyze and predict the range, height, and velocity of a horizontal projectile.
9. Compare the velocity, acceleration, height, and range of horizontal projectiles with and without air resistance.
10. Describe relative velocity in terms of 1D and 2D reference frames and determine the velocity of an object relative to a given reference frame.