

LESSON PLAN AP PHYSICS 1 & 2

Unit 2: Newtonian Mechanics – Kinematics in Two Dimensions

OBJECTIVES:

There are no AP Physics 1 or AP Physics 2 learning objectives that focus *solely* on the topics covered in this unit. However, both concepts, vectors and projectiles, weave into other themes in the AP Physics 1 and AP Physics 2 curricula. Our objectives in this unit are therefore ...

1. ...to lay a foundational understanding of vector operations and projectile motion so that when these arise in contexts we will encounter later in the course, we are prepared.
2.to reinforce every learning objective from the previous unit by practicing kinematic analysis of motion in the context of projectile motion.

There is this objective, which is embedded in other more complex topics. For now, we can focus on it in simple terms:

Essential Knowledge 3.E.1 ...

c. The component of the net force exerted on an object perpendicular to the direction of the displacement of the object can change the direction of the motion of the object without changing the kinetic energy of the object. This should include *uniform circular motion and* projectile motion.

PROCEDURE:

1. Phase 1: Vector Operations
 - Notes: Roman numerals I & II
 - Homework 1: Beginning on page 81:
 - Conceptual Questions: 13-16
 - Problems: 1, 3, 4, 6, 8, 9, 10
 - Concepts & Calculations: 74
2. Phase 2: Projectiles
 - Notes: Roman numeral III
 - Demo and inquiry: Projectile launchers
 - Homework 2: Beginning on page 81:
 - Conceptual Questions: 2-12 (Try really hard on 9, 11, and 12. These are really good questions. For number 9, if you get stuck, play with your formulas first.)
 - Problems: 12, 18, 20
 - Additional Problems: 60, 61, 63
 - Concepts & Calculations: 75, 76 (Only do the conceptual parts of these.)

LABORATORY COMPONENT: Inquiry with the projectile launchers