

Mr. Jenkins
Physics I

Assignment Sheet Vectors and Projectile Motion

Objectives

You will be able to:

- A. Add vectors using graphical (head-to-tail) and component methods.
Use the Pythagorean Theorem and sine, cosine, and tangent functions to determine the components of a vector.
Use the Pythagorean Theorem and inverse sine, inverse cosine, and inverse tangent functions to determine the magnitude and direction of a resultant vector by the component method.
- B. Apply vector addition to solve relative velocity problems.
- C. Explain the concept and consequence of being able to consider horizontal and vertical motions independently and the use of superposition of the directions to determine the motion of a projectile.
Sketch/draw an x-y graph of position for a projectile.
Explain how the components of the velocity vector change during the motion of a projectile.
Explain qualitatively how air resistance would affect the flight of a projectile.

Reading

- A. Vectors, p. 118–125
H2.01 Trigonometry for Physics
- B. 6.3 Relative Motion in Classical Physics, p. 157–159
Relative Motion video
Frames of Reference video
- C. 6.1 Projectile Motion, p. 147–152
Projectile Motion video

Laboratory

Vector Hitch

Demonstration – The Monkey

The Pumpkin

Written Homework *Study notes and read text nightly*

Assignments as necessary to support class work and reading (as given on board and website)

Focus Questions:

1. Explain the concept of relative motion as it relates to airplane flight. Include long distance flights and the jet stream and landing with a crosswind.
2. Write an annotated guide to solving 2D motion problems including the x-y chart (Ds_x , Ds_y , v_x , v_y , etc.)