Key Terms

air resistance a frictional force that slows the motion of objects as they travel through the air; when solving basic physics problems, air resistance is assumed to be zero

amplitude the maximum displacement from the equilibrium position of an object oscillating around the equilibrium position

analytical method the method of determining the magnitude and direction of a resultant vector using the Pythagorean theorem and trigonometric identities

component (of a 2-dimensional vector) a piece of a vector that points in either the vertical or the horizontal direction; every 2-d vector can be expressed as a sum of two vertical and horizontal vector components

deformation displacement from equilibrium, or change in shape due to the application of force

equilibrium position where an object would naturally rest in the absence of force

frequency number of events per unit of time

graphical method drawing vectors on a graph to add them using the head-to-tail method

head (of a vector) the end point of a vector; the location of the vector's arrow; also referred to as the tip

head-to-tail method a method of adding vectors in which the tail of each vector is placed at the head of the previous vector

Hooke's law proportional relationship between the force $\mathbf{F}$ on a material and the deformation ΔL it causes, $\mathbf{F} = \mathbf{k}\Delta L$

kinetic friction a force that opposes the motion of two systems that are in contact and moving relative to one another

maximum height (of a projectile) the highest altitude, or maximum displacement in the vertical position reached in the path of a projectile

oscillate moving back and forth regularly between two points

period time it takes to complete one oscillation

periodic motion motion that repeats itself at regular time intervals

projectile an object that travels through the air and experiences only acceleration due to gravity

projectile motion the motion of an object that is subject only to the acceleration of gravity

range the maximum horizontal distance that a projectile travels

restoring force force acting in opposition to the force caused by a deformation

resultant the sum of the a collection of vectors

resultant vector the vector sum of two or more vectors

simple harmonic motion the oscillatory motion in a system where the net force can be described by Hooke's law

simple pendulum an object with a small mass suspended from a light wire or string

static friction a force that opposes the motion of two systems that are in contact and are not moving relative to one another

tail the starting point of a vector; the point opposite to the head or tip of the arrow

trajectory the path of a projectile through the air

vector addition adding together two or more vectors