

Test 1 will cover the material presented in modules 1 - 6.

You should be able to

- Distinguish between scalar and vector quantities
- Add and subtract vector quantities
- Distinguish between distance, displacement, speed, velocity, and acceleration
- Distinguish between average and instantaneous speed, velocity, and acceleration
- Describe and analyze one-dimensional motion with constant speed or constant acceleration and work problems using the kinematic equations
- Describe and analyze problems involving freely-falling objects
- Describe and analyze problems involving projectile motion
- Describe and analyze problems involving uniform circular motion and distinguish between radial and tangential acceleration
- Distinguish between mass and weight
- Draw free-body diagrams
- Apply Newton's second law to relate the net force acting on an object to its acceleration
- Find the net force acting on an object
- Analyze various situations in terms of the law of action and reaction
- Define static and kinetic friction
- Work problems involving friction between two surfaces
- Analyze circular motion and identify the centripetal force
- Calculate the work done by a constant force and by spring forces
- Find the change in potential and kinetic energy of an object acted on by conservative forces
- Use conservation of mechanical energy to solve physics problems
- Find the gravitational or the elastic potential energy of an object
- Find the impulse produced by a force
- Use conservation of momentum to solve physics problems
- Find the center of mass of a system.
- Use the equation of rotational kinematics to describe the motion of an object under constant angular acceleration.
- Find the moment of inertia about an axis of a simple system of point masses.
- Find the angular acceleration and the change of the angular momentum produced by a torque.
- Find the torque produced by a force.
- Use conservation of angular momentum to solve physics problems.
- Find the kinetic energy of rotating objects.