

## Physics Mechanics Project Questions

- 1) What is the relationship between the length and period of a pendulum given a constant mass?
- 2) What is the relationship between the mass of a pendulum and its period given a constant length?
- 3) What is the relationship between the angle a pendulum starts and the period of a pendulum given a constant mass and length for the pendulum?
- 4) What is the relationship between the mass of a ball and the speed at which it rolls after rolling down an inclined plane given a constant height and angle?
- 5) What is the relationship between the height a ball starts on an inclined plane and the speed it rolls after rolling down an inclined plane? Assume the plane has a constant slope and with the ball has a constant mass?
- 6) What is the relationship between the angle of incline of an inclined plane and the speed a ball has after rolling down the plane? The ball rolls down the same length of plane each time.
- 7) What is the relationship between the angle a projectile is launched and its horizontal range? Assume a constant mass and initial force for the projectile.
- 8) What is the relationship between the initial force a projectile is launched with and the horizontal range that it travels? Assume a constant mass and angle of launch for the projectile.
- 9) What is the relationship between the mass of a projectile and the horizontal distance that it travels. Assume a constant initial force and angle of launch for the projectile.
- 10) What is the relationship between the angle of an incline and the work required to move a mass up the incline? The mass should reach the same height for each angle.
- 11) A mass is supported by a spring that is extended and allowed to oscillate up and down. How is the mass related to the period of the oscillation?
- 12) A mass is supported by a spring that is extended and allowed to oscillate up and down. How is the initial stretch of the spring related to the period of the oscillation?
- 13) A mass is supported by a spring. What is the relationship of the mass to the length the spring is extended?

- 14) A rope is used to drag an object across a surface. How is the mass of the object related to the force necessary to start the object moving?
- 15) A rope is used to drag an object across a surface. How does the area of the mass affect the force required to start the block moving?
- 16) A rope is used to drag an object across a surface. How does the angle of the rope from the horizontal related to the force necessary to start the object moving?
- 17) How does the tension in a vertically strung string holding a mass vary as the mass the string is holding is changed?
- 18) How does the mass of an object affect the time it takes to fall a certain distance?
- 19) A lever is used to lift a mass. How does the distance from the effort force to the fulcrum affect the force required to lift the mass?
- 20) A lever is used to lift a mass. How does the distance from the fulcrum to the load affect the force required to lift the mass?
- 21) How does the gravitational potential energy of a mass change as its height above a reference height is increased?
- 22) How does the height a rolling mass starts on an inclined plane affect the momentum it has once it rolls off the plane?
- 23) How does the mass of an object rolling off an inclined plane affect the kinetic energy it has once it is off the plane?
- 24) How does the mass of an object rolling off an inclined plane affect the time it takes it to roll off the plane?