Measurement of Acceleration Due to Gravity Using a Simple Pendulum

Objective: To determine the value of gravitational acceleration (g) using a simple pendulum.  
  
Apparatus: String, metal bob, stopwatch, meter scale, clamp stand.  
  
Procedure: A pendulum of known length was set into oscillation. The time for 20 oscillations was measured and the time period (T) was calculated. The value of g was determined using the formula g = 4π²L/T².  
  
Observations: Length (L) = 1.00 m, Time for 20 oscillations = 40.2 s, T = 2.01 s.  
  
Calculation: g = 4π²(1.00) / (2.01)² ≈ 9.78 m/s²  
  
Conclusion: The experimentally obtained value of g is in close agreement with the standard value, validating the method's accuracy.