

Date: _____

The Masters School
Mr. Alex Rawson
Physics

Pendulum Oscillations

1. Find the period and frequency of a 9.8 m long pendulum. (2 pts)
2. A visitor to a lighthouse wishes to determine the height of the tower. The visitor ties a spool of thread to a small rock to make a simple pendulum, and then hangs the pendulum down a spiral staircase in the center of the tower. The period of oscillation is 9.49 s. What is the height of the tower? (2 pts)
3. A 3 m long pendulum on the moon takes 8.511 seconds to complete 1 pendulum. What is the value of gravity on the moon? (2 pts)

Spring-Mass Oscillations

4. A spring with a spring constant of $1.8 \times 10^2 \text{ N/m}$ is attached to a 1.5 kg mass and then set in motion. (2 pts)
 - a. What is the period of the mass-spring system?

 - b. What is the frequency of the vibration?

5. Two teenagers take a big F-350 truck joyriding around an off-road race course, with a combined weight of 2450 kg . A jump in the course sends the truck jumping and upon landing the shocks in the car oscillate for 1.1 seconds . Find the spring constant of the shocks in the truck. (2 pts)