Optional Practice Problems: Honors Physics

1. A guitar string has a length of 0.5 meters. If the string is vibrating with a wavelength of 0.25 meters, what harmonic is it vibrating at? **Answer:** Fourth

2. Given a string of length of 2 meters with two fixed ends, what is the longest wavelength of a standing wave that is possible? **Answer:** 4 meters

3. What is the frequency of a standing wave traveling at a velocity of 20 meters per second through a string length of 4 meters? **Answer:** 2.5 Hertz

4. Assume a pendulum clock on Earth takes 2 seconds to complete one cycle. If a pendulum clock with the same length is on Mars and both starting swinging at noon. What time would the pendulum clock on Mars read when the Earth clock reaches 6 p.m.? **Answer:** 3:44 p.m.

5. Assume the frequency of a wave is 5 Hertz which is traveling 15 m/s. Solve for $x\ where\ y_{max}\ (x) = \sin(\frac{2\pi}{\lambda}x)$. **Answer:** 0.75 m