Homework 9.1

(each problem 2 points, total points: 12)

E.1 It would run slow. If g is smaller, T will get longer $\boxed{T = 2\pi\sqrt{\frac{L}{g}}}$.

E.3 The period will decrease as the pendulum (L) gets shorter $\boxed{T = 2\pi\sqrt{\frac{L}{g}}}$

E.4 If the period is independent of the amplitude, it is harmonic motion. For harmonic motion, the force, F, is proportional to the displacement, x (how far you bend the tree).

E.5 Push on it as it flexes away from you (so you do work on it).

E.6
Case1: If the period does <u>not</u> depend on the amplitude (how far you push), then it is harmonic motion, and the restoring force, F, is proportional to the displacement.

Case1: If the period <u>does</u> depend on the amplitude (how far you push), then it is <u>not</u> harmonic motion, and the restoring force, F, is <u>not</u> proportional to the displacement.

E.8 The pendulum clock would not work accurately on the moon, since its period depends on g $\boxed{T = 2\pi\sqrt{\frac{L}{g}}}$
The balance clock and the quartz watch would work just fine, since the period does not depend on g.