1. As a warm-up, use the Lagrangian to find the equation of motion for a mass (m) on the end of a horizontal spring with spring constant k.

2. Earlier this semester, you had a discussion problem where a long spring (constant k) was attached to a pendulum (length l, mass m) as drawn below:

What choice of coordinates is most sensible to analyze this problem? Use the Lagrangian to find the angular frequency of this system for small oscillations.