

Please answer the questions below to the best of your ability either in the space provided. Everything should be scanned or photographed and submitted through [gradescope.com](https://www.gradescope.com). Show all your work for full credit!

**Objective:** *I can use microscopic properties to make predictions about macroscopic behavior.*

1. **Sodium** is a soft, highly reactive metal. Suppose you have a long rectangular wire of sodium which has a 2 mm by 2 mm square cross-section and is 1 m long. I tell you that the intermolecular spring constant between sodium atoms is 3.40 N/m. Other constants you might want to grab from the given link.

(a) What is the approximate diameter of a sodium atom?

- (b) Suppose you hang a 10 kg weight from the end of the wire. How much longer will the wire be when the system reaches equilibrium?