WebAssign
Lab #5: Spring-Ball Model of Matter (Homework)

Yinglai Wang
PHYS 172-SPRING 2012, Spring 2012
Instructor: Virendra Saxena

Current Score : 3 / 3 **Due :** Tuesday, February 14 2012 11:59 PM EST

1. 3/3 points | Previous Answers

Suppose you have three different wires made of the same material.

Wire 1 has length *L* and cross-sectional area *A*.
Wire 2 has length 4*L* and cross-sectional area *A*.
Wire 3 has length *L* and cross-sectional area 4*A*.

When you hang a 2 kg mass on wire 1 it stretches by 1.8 mm, and when you hang 4 kg on wire 1 it stretches by 3.6 mm.

If you hang a 2 kg mass on wire 2, how much should it stretch? 7.2 ✓ mm.
If you hang a 2 kg mass on wire 3, how much should it stretch? 0.45 ✓ mm.

If you measure Young's modulus for all three wires, what should you find?

- [x] Young's modulus will be the same for wires 1, 2, and 3.
- [ ] Young's modulus will be smaller for wire 2 than for wire 1, because wire 2 is longer.
- [ ] Young's modulus will be larger for wire 3 than for wire 1, because wire 3 is thicker.

✓