Physics F14 MT2 retake, question #2, Nov. 18, 2014 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. (15 pts) Your job is to slow boxes down as they move down a 30° incline as shown at right. Boxes (m = 20 kg) start at a speed of 10 m/s at the top of a 4m incline. The coefficient of friction of 1.5 between the boxes and ramp help you slow them. You are touching the boxes only for the last 2 m of their trip down the incline and your job is to make sure they are only moving 5 m/s by the time they get to the bottom.

**60O**

a) Find the force of friction.

b) How much heat is liberated in this process?

c) What is the change of potential energy of the system?

d) How much work should I do on each box?

e) What is the force that I need to push with? Include direction.

1. Your Statements:
2. Please write and sign the following statement: “I will not share and have not received any information about this test.”

*Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1. If you didn’t use a calculator for this test and would like extra credit for it, please write and sign the following statement: “I didn’t use a calculator on this test - *your signature*”

*Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*