FLINN SCIENTIFIC

Name_____

AP Physics 1 Review Questions

Integrating Content, Inquiry and Reasoning

A spring-loaded launch mechanism is used to propel a box up a frictionless ramp. The box has a mass of 2.20 kg and an initial height of 0 m. The spring constant of the launch mechanism is 1776 N/m.

1. The spring is compressed by 0.20 m and released. Determine the maximum height of the box.

2. The box then slides back down the ramp from its maximum height into the spring. What is the compression distance of the spring? Explain.

3. Predict how the following independent changes to the spring-box system would affect the maximum height of the box.
   a. Doubling the mass of the box.

   b. Doubling the compression distance of the spring.

   c. Decreasing the angle of the ramp.

4. Assume the spring is now attached to the box and has a mass of 0.150 kg. The spring is compressed by 0.20 m and released. Will the box-spring system travel to the same height found in Question 1? If not, will it go higher or lower? Justify your answer.