Name: Date: Period:

The Godfather of All Mechanics Problems

You can complete this problem by test day for 5 bonus points! Even if you don't get it totally correct, you will get partial bonus for attempting. **Note that you will need to use physics from both the Momentum unit and the Energy unit to solve!**

A force of 20 N is applied to a 2-kg block for 0.28 s. It then travels at a constant velocity along a frictionless surface before coming to a frictionless ramp that is 3 m high and at a 20-degree angle. At the bottom of the ramp, it encounters a friction force of -2 N. How far from the bottom of the ramp (the value d on the diagram) will the block slide until coming to a stop? (*Hint:* Use the diagram below to label the values you might have. You will need to break the problem into smaller parts.)