

### **Deadly Gorge Bungee Jump Design**

You are an engineer and designer of thrill experiences and rides. The people at *Deadly Gorge* have hired you to design a bungee jumping ride for them. They want to make it so that their customers get at least slightly wet when plunging towards the shallow lake at the bottom of *Deadly Gorge* but not so that customers will touch the rocky bottom of the lake. A major concern of the executives at *Deadly Gorge* is that their customers don't experience drastic accelerations while on the ride. They want a nice smooth ride for all customers, no matter their mass.

You have a mass set to represent customers, and a set of springs and string to represent the bungee. An adjustable stand will represent the jumping point. A small pan of water will represent the lake. You will have a meter stick and the electronic balance available for measurements. Customers will have a range of masses from 100 g to 750 g.

You may run infinite "test jumps" with your masses. On test day your teacher will give you an "actual customer" to test your ride on. A small portion of your grade will be a successful jump.

For this design process, you should do the following:

1. Write up a general solution to the problem. Your solution should include diagrams, equations, and a narrative explaining your thought process and solution. (30 pts)
2. A "user guide" for your bungee ride. The user guide should walk the operator through the necessary steps needed to set the ride up for each customer. (20 pts)
3. Test jump (1 pt)