Paper Roller Coasters: Criteria

**Purpose**: To investigate the relationship between potential and kinetic energy.

**Background**: Roller coasters operate on the principles of potential and kinetic energy. The car is raised to a certain height, giving it gravitational potential energy. Then it is released, and the potential energy is converted into kinetic energy—the energy of motion. You will build your own roller coaster to investigate the relationship between potential and kinetic energy.

**Task**:

1. You are a roller coaster manufacturer competing for a bid to build a roller coaster for an amusement park. Your task is to design and build a paper model of the most fun and exciting roller coaster you can using the templates provided (<http://www.paperrollercoasters.com/>).

You also need to be able to explain the physics behind it.

2. The entire roller coaster must fit on the base provided (18˝x 24˝). The coaster must include at least one curve, loop, and hill. It must also include one other element of your own design; this may be made by modifying the supplied templates or you may make it out of a material of your choice (not pre-made). The end point should be at ground level and free from obstruction.

3. You will be expected to keep an engineering journal of your design and build process as well as a data sheet that summarizes the physics behind your roller coaster.

4. You will then present your roller coaster to the amusement park manager (teacher) and a panel of roller coaster enthusiasts (fellow students) and explain the design and build of the roller coaster and why it is the most fun and exciting based on the physics involved

