

Program Description:

Students discuss how energy can be stored and how its release can be controlled and transformed into motion. They discuss examples that include wind-up clocks powered by springs and a cart designed by Leonardo DaVinci. Students are then shown how to build a simple car that is powered by winding and releasing a rubber-band. They are challenged to discover ways to improve their car so that the stored energy is transferred as efficiently as possible into motion. Typical variables that students explore include how much the rubber-band is wound up, how long a rubber-band chain to use, and whether to add rubber-bands to the outside of the wheels to improve traction.

Learning Objectives:

1. Students will understand that energy can be stored in a spring or rubber band, then transformed into motion as the rubber band exerts a force on the axle of the car.
2. Students will identify and test variables that have an effect on the transformation of the potential energy stored in a spring into motion.
3. Students will develop strategies for testing ideas and using feedback to improve their car's performance.

Alignment with Connecticut Core Science Curriculum

- 4.1** *The position and motion of objects can be changed by pushing or pulling.*
- The size of the change in an object's motion is related to the strength of the push or pull.

Key Vocabulary: *energy, store, release, spring, motion, friction*

Preparation for Visit:

This program can be used either as part of a force and motion unit or to develop experimentation skills. Students might visit the museum early in the unit to provide a foundational experience to which they can later apply more formal terms. They might also visit later in the unit when they already have a sense of what a force is and know some of the forces that influence motion.