

## 44. Big Ball K'nex Roller Coaster

**Classroom Activity:** To assemble the K'nex Big ball Roller Coaster kit, operate it, and use it to explore and discuss the four types of motion.

**Grade:** 4

**Strand (s):** Understanding Structures and Mechanisms

This task addresses the following overall expectations:

- investigate ways in which pulleys and gears modify the speed and direction of, and the force exerted on, moving objects;
- demonstrate an understanding of the basic principles and functions of pulley systems and gear systems.

and the following specific expectations:

- follow established safety procedures for working with machinery;
- use scientific inquiry/experimentation skills to investigate changes in force, distance, speed, and direction in pulley and gear systems;
- use technological problem-solving skill to design, build, and test a pulley or gear system that performs a specific task;
- use appropriate science and technology vocabulary, including pulley, gear, force, and speed, in oral and written communication;
- use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes.

**Assessment Categories:**

- Knowledge and Understanding
- Thinking and Investigation
- Teambuilding skills

**Type of Activity:** Classroom or Science Lab

**Preparation:** Obtain roller coaster kit

**Materials and Resources for Teachers:** No additional resources required. Footage or photos of roller coasters could be useful.



Time needed to complete this activity: 600 minutes

**Materials/Resources for students:**

Big Ball Roller Coaster K'nex Kit

**Activity Description:**

Review the four types of motion and explain how they relate to the roller coaster. Have the students research famous roller coasters. A good starting point would be the roller coaster database at <http://www.rcdb.com>.

Introduce them to the K'nex kit which comes with fairly complete instructions. Having a diagram of the completed structure is very helpful.

Have the students build the structure then use it to study and discuss the four types of motion.

Cross-disciplinary connections: Mathematics