Student Activity: **Internet Research**

http://www.intel.com/education/projects/wildride/learning/index.htm

During Phase 3, students expand their knowledge of roller coasters in five activities that involve Internet research.

1. Internet Scavenger Hunt: Students work in pairs finding answers to a list of questions at specific Web sites.

Student Handout: Internet Scavenger Hunt

http://www.intel.com/education/projects/wildride/learning/sciencehandout1.htm

This activity gets students ready for building the extensive database of roller coaster sites.

Instructions: Visit each of the Web sites below to answer as many questions as you can.

WEB SITE 1: http://www.learner.org/exhibits/parkphysics/coaster/*

- Where was the first American roller coaster and what year was it created?
- Explain how the two types of energy work in a roller coaster.
- What are the different types of wheels on a roller coaster?
- What was the nation's first theme park?
- What was the first tubular steel coaster called?
- What is momentum?
- What is velocity?

WEB SITE 2: http://www.ultimaterollercoaster.com/*

- What is the tallest and fastest roller coaster in the world?
- How fast does it go?
- Where is the Supreme Scream located?
- What amusement park has the Freefall?
- What roller coaster has the longest drop?
- What roller coaster is the longest in the world?

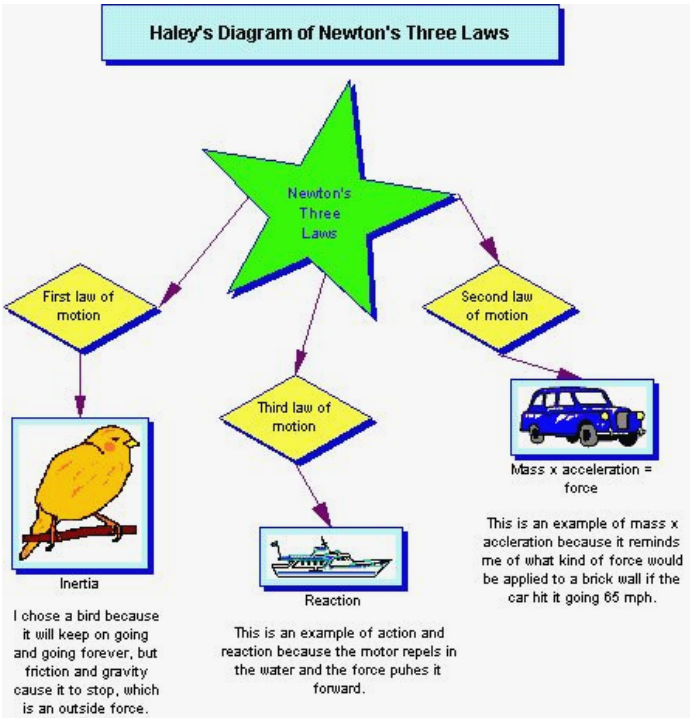
WEB SITE 3: http://library.thinkquest.org/C005075F/English_Version/history%20coasters.htm?tqskip1=1&tqtime=0601*

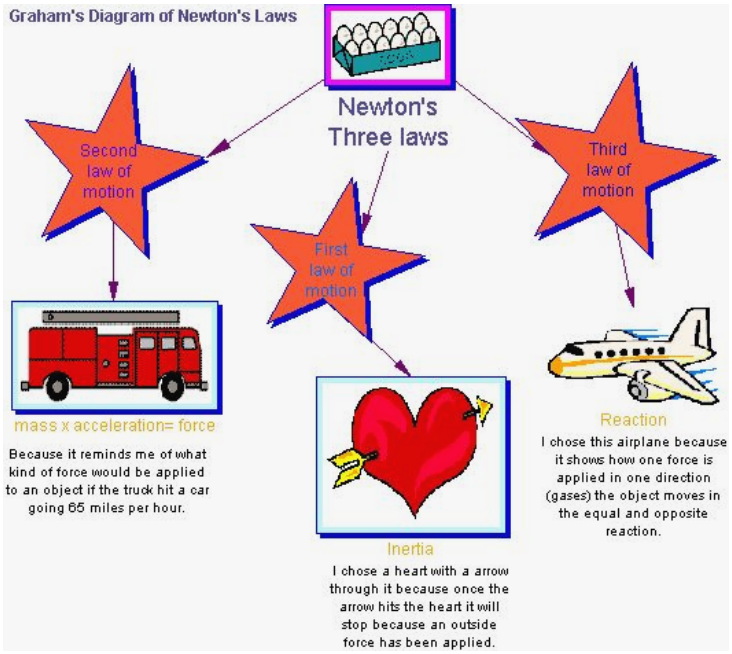
- When was the first real roller coaster built?
- Where was it built?
- Who is commonly referred to as the Father of the Roller Coaster?

2. Diagramming Newton's Laws: Students gather information from Web sites and build a diagram on Newton's Laws using *Inspiration* software.

Sample Student Diagrams on Newton's Laws

Student diagrams of Newton's Laws include explanations for why each symbol represents one of the Laws of Motion.





3. Database for Researching Roller Coasters: Students search the Internet for roller coaster Web sites. Each student creates a database table of seven or so sites and classifies each as a good source for:

- **Force and motion** tutorials
- Roller coaster **design** elements
- **History** of roller coasters or amusement parks
- Current roller coaster **statistics** highest drop, fastest, etc.

Database Activity and Student Sample:

Students filled in a table with the Roller Coaster Web sites they found.

The handout and one student's results are shown below.

The Hunt for Roller Coaster Web sites

Instructions: Search the Internet for sites that address the following four aspects of roller coasters:

1) **History of RC** 2) **Design of RC** 3) **Statistics of RC** 4) **Force and Motion**

TYPE	URL ADDRESS	DESCRIPTION/REVIEW

This student found and described roller coaster sites.

Type	URL ADDRESS	Description/Review
Design and History	http://www.learner.org/exhibits/ parkphysics/coaster.html*	Tells about the history and design of roller coasters
History	http://library.thinkquest.org/C005075F/English_Version/ history%20coasters.htm?tqskip1=1&tqtime=0601*	A little bit of history on roller coasters
Force of motion	http://www.scilinks.org/nsfinstitute/SciBerEyes /forceandmotion.htm *	Discusses principles involved in roller coasters

The database of over 1000 compiled records was cleaned up for redundancies and errors by aides. The resulting roller coaster database of over 80 sites was used by all classes in the remaining phases of the project.

Roller Coaster Database

4. Testing Designs with Online Simulations: Three Web sites provide opportunities to test roller coaster design ideas and principles.

Designing Simulated Roller Coasters Online:

http://www.intel.com/education/projects/wildride/learning/designsimulations.htm

Theresa started this activity in the computer lab projecting each Web site for whole class viewing. The students contributed design suggestions, student volunteers entered the parameters, and Theresa prompted discussion about design results. Students then worked in pairs at the computers with the following instructions:

Now build your own roller coaster! Visit each Web site and follow the instructions for selecting and adjusting design features. Finish with an entry in your composition book about your different designs and results

Amusement Park Physics: http://www.learner.org/exhibits/parkphysics/coaster/*

This simulation has students select from choices for different elements: height of hills, shape of hills, loop shape, and exit path. Students get feedback about safety and fun level of the coaster. (Note: "Amusement Park Physics" complements programs from *The Mechanical Universe...and Beyond*, a video series in the Annenberg/CPB Multimedia Collection.)

Fun-derstanding Site: http://www.funderstanding.com/k12/coaster/*

Students adjust settings using slider controls for the height of hill #1, hill #2, the size of a loop, the initial speed of the coaster, its mass, the gravity at work and the amount of friction on the track. (Note: The site requires a Java-enabled browser and takes time to load.)

Discovery Site: http://dsc.discovery.com/convergence/coasters/interactive/interactive.html*

Students select from design elements and sequence them into a ride before submitting it to Vince, who will critique the ride for level of fun.