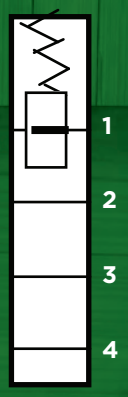
Thank you for participating in X-treme Physics at Busch Gardens Williamsburg

The space shuttle astronauts experience a maximum of 3 *g*'s on liftoff. 3 *g*'s means that the astronauts feel three times heavier than normal. (It is sometimes called a "*g* force" or Force Factor.) A force of 1 *g* is what you experience sitting in the coaster at the station. Jet pilots catapulted off an aircraft carrier experience 3.5 *g*'s. Here at Busch Gardens, you will have the thrill of experiencing *g*'s similar to an astronaut or jet pilot.

Today in the park, you will have a unique opportunity to measure "*g* forces" on several rides. An accelerometer, a device that measures *g* forces, is mounted on the following rides: Battering Ram, Da Vinci's Cradle, Apollo's Chariot, Griffon, and Alpengeist.



The park's accelerometers are similar to the one pictured on the right, except they don't have the numbers indicated. The "*g* force" reading on the example accelerometer is 1, or normal weight, and 0 *g*'s would be weightless. At the bottom of a coaster hill, in a turn, or at the bottom of the swing of the Battering Ram, the spring will stretch and the hanging weight will move down to 2, 3 or maybe even 4 *g*'s.

Take accelerometer measurements on the five rides that feature accelerometers. In each case, you should estimate the "*g* force" to the the nearest 1/2 *g* (i.e 2.5 *g*'s, 3.0 *g*'s, etc.) You may want to compare your reading to those of other students when you get back in class. You may also want to discuss your experiences on these rides.

The complete X-treme Physics workbook includes instruction on how to gather additional data, and has questions and problems that will help you understand the physics of thrill rides.

Apollo's Chariot

g force at the bottom of the first hill.

g force at the bottom of the second hill.

Battering Ram

Highest *g* force measured during the ride

Da Vinci's Cradle

Highest *g* force measured during the ride

Alpengeist

g force at the bottom of the first hill

g force at the bottom of the second hill

Griffon

g force on the way down the first hill

g force at the bottom of the first hill

g force at the bottom of the second hill

Have a great day at Busch Gardens, Virginia's biggest and best physics laboratory.

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