STEM Scavenger Hunt: High School

Graph Matching

A number of graphs are shown at the STEM Center. Match the graph (Letters) with the correct ride (Numbers). A ride may be used more than once or not at all.

___ A	1.	Batman
___ B	2.	Boomerang
___ C	3.	Crow's Nest
___ D	4.	Fireball
___ E	5.	Hurricane Force 5
___ F	6.	Iron Rattler
___ G	7.	Joker
___ H	8.	Poltergeist
___ I	9.	Scream!
___ J	10.	Super Villains Swings
	11.	Superman
	12.	Wonder Woman

Graph Analysis

Use Graph K (*Iron Rattler)* at the STEM Center to answer these questions. Match the locations on the graph (letters) to the descriptions (numbers). Letters may be used more than once or not at all.

___ 1. Lift Hill ___ 2. Maximum Potential Energy

___ 3. Maximum velocity ___ 4. Maximum Kinetic Energy

___ 5. Zero g roll ___ 6. Maximum vertical (X) acceleration

Use Graph O (*Superman*) at the STEM Center to answer these questions. Match the locations on the graph (letters) to the descriptions (numbers). Letters may be used more than once or not at all.

___ 1. Maximum Potential Energy ___ 2. Maximum Kinetic Energy

___ 3. Bottom of loop ___ 4. Top of loop

___ 5. Maximum vertical (X) acceleration

___ 6. Centripetal force is directed downward

___ 7. Feeling almost weightless

Use Graphs L & M to answer this question. Some people say they can feel the difference when riding in the front or back of a coaster. One of the graphs is from the front car and the other is from the back car of a coaster.

Graph ____ is the front Graph ____ is the back

Explain why you think so

Bonus (Answer on back or use additional pages if needed)

Use graph N (*Fireball)* to answer this question. What is happening at the locations labeled A?

Use graph Q (*Poltergeist)* to answer this question. The Poltergeist is different from the rest of the coasters. A student, without even seeing the start of the ride, concludes that the train must be catapulted out of the station at great speed. Why?

One thing that is different about the *Batman* ride is that the cars spin as well as run on the track. Watch the ride and observe the structure of the track and the cars. Is the spinning of the cars completely random or is there some pattern? Does something cause it? Explain your reasoning.

Use graph P (*Carousel)* to answer this question. At the start of the ride the sensor was at one location. About halfway through the ride it moved to a different location.

1. What can you tell about the two locations?
2. Explain your thinking.