Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rollercoaster Physics---Loop-Loop Simulation

Essential Question: How can a rollercoaster go upside down without falling?

1. What happens to the Total Energy of the rollercoaster as you increase the mass? **Adjust Hill Height to 100m and Loop Radius to 40m. Keep them constant at those rates:**

|  |  |
| --- | --- |
| **Mass of rollercoaster (kg)** | **Total Energy (J)** |
| 1200 |  |
| 1800 |  |
| 3500 |  |

1. What happens to the Total Energy of the rollercoaster as you increase the Hill height? Explain how this affects the travel of your coaster. **Adjust mass to 1800Kg and Loop Radius to 40m. Keep them constant at those rates.**

|  |  |
| --- | --- |
| **Hill Height (m)** | **Total Energy (J)** |
| 60 |  |
| 80 |  |
| 100 |  |
| 120 |  |
| 140 |  |
| 160 |  |

1. What happens to the total energy of the coaster as Loop Radius increases? How does the coaster travel??? **Keep mass 1800 Kg and the hill height at 100m.**

|  |  |
| --- | --- |
| **Loop Radius (m)** | **Total Energy (J)** |
| 20 |  |
| 40 |  |
| 60 |  |
| 80 |  |
|  |  |
|  |  |

1. Look back at your results. Which rollercoaster traveled the best and did not fall off the track—please explain the mass, hill height and loop radius of the rollercoaster that works the best.