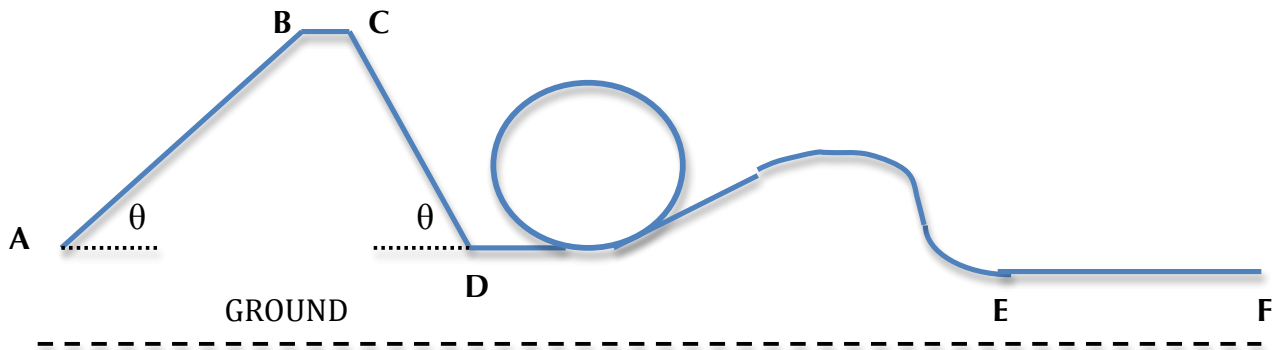


COMPLETE Six Flags Ride Information Sheet

Below is a rough diagram of a typical roller coaster. Let's say it's a model for Green Lantern.



Using the information provided on the back of this sheet, make **TWO** quantitative FBDs for the roller coaster train. You can pick from the following three locations: between A & B, C & D, and E & F. Then pick two of the following questions to answer:

- *What is the velocity of the train at the bottom of the first drop (Point D)?*
- *How much time does it take the train to travel down the first drop (between Points C & D)?*
- *How fast was the train moving just before braking to a complete stop (Point E)?*

Be sure to show all work and clearly and thoroughly label your FBDs. This assignment is due on **Monday**.

Green Lantern Ride Information

NOTE: All heights are relative to the ground.

- Mass of Empty train: 3200kg
- Average Passenger Mass: 65kg
- Number of Passengers: 28

- Drag Force applied by the Air to the train: 800N
- Frictional force applied to train by track (for Points A through D): 1000N

- Cart is lifted at a constant velocity by a chain on the first hill (between A and B)
- Height of Loading Station (Point A): 5m
- Height at Top of Lift Hill (Points B and C): 47m
- Time of Climb (Point A to Point B): 32s
- Angle of Incline (θ at Point A): 30°

- Velocity at top of first drop (Point C): 0m/s
- Length of First Drop (Points C to D): 51.3m
- Angle of Descent (θ at Point D): 55°
- Height at Bottom of First Drop (Point D): 5m

- Velocity at the end of the ride (Point F): 0m/s
- Stopping Distance (between Points E and F): 5m
- Stopping Time (between Points E and F): 2.4s