

Forces

What objects are interacting with the train on the way up to the top of the hill?

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Construct a Free-Body Diagram and a motion diagram for the car on the way up to the top. Be sure to include the direction of the net force and acceleration (if applicable). What relationship can you determine between net force, velocity and acceleration?

Construct a Free-Body Diagram for any portion of the loop of the roller coaster. Show the diagram to another group to see if they can determine where on the loop the car must be at to coincide with your diagram.

Estimate the magnitude of Force that the cable would be exerting on the train as it is being pulled up the hill. Be sure to explain all of your assumptions and uncertainties.

What is the minimum velocity you need in order to keep the train on the tracks at the top of the loop?