

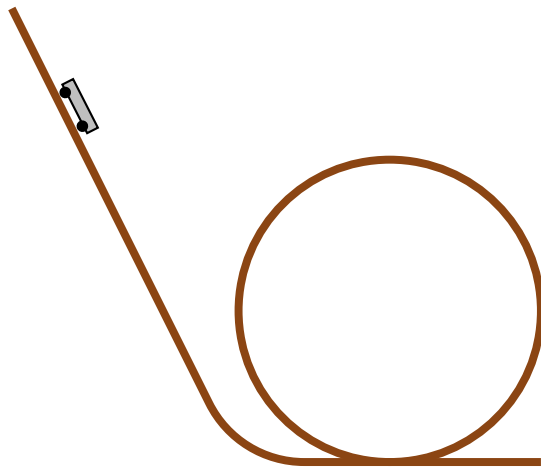
Warm Up Question 1

Two people, with different masses, skateboard up a ramp. They have the same speeds at the base of the ramp. How will the maximum heights that they reach compare (e.g. lower for heavier person, higher for heavier person, etc,...)? Explain your answer, ignoring friction and air resistance.

1. Higher for the heavier. Larger kinetic energy at the base for heavier.
2. Lower for the heavier. Larger gravitational force on heavier.
3. Same. Mass cancels.

Question 1

A roller coaster cart is released from rest on a ramp. The cart approaches a loop with radius R .



What is the *minimum* height from which the cart must be released if it is to complete the loop without falling?

1. Less than R .
2. Exactly R .
3. Between R and $2R$.
4. Exactly $2R$.
5. Larger than $2R$.

Warm Up Question 2

Two monkeys, a (larger) parent and a (smaller) baby, each swing at the end of ropes with the same length. The top ends of the ropes are attached to structures at the same height and the monkeys both leave a platform at the same height. The ropes are always taut and do not stretch. How do the speeds of the monkeys at the lowest points compare (e.g. smaller monkey has smaller speed,...)? Explain your answer, ignoring friction and air resistance.

1. Larger monkey has larger speed. Larger force on the larger monkey.
2. Larger monkey has larger speed. Larger energy for the larger monkey.
3. Smaller monkey has larger speed. Same KE, smaller mass means larger velocity.
4. Same. Mass cancels.