Bouncing Cart—Work Done on the Barrier [62]

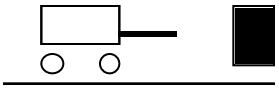
A cart with a spring plunger runs into a fixed barrier. The mass of the cart, its velocity just before impact with the barrier, and its velocity right after collision are given in each figure.

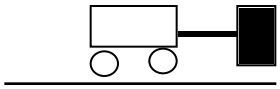
Rank the work done *on* the barrier by each cart from the greatest work done on the barrier to the least work done on the barrier (+ direction is to the right and - to the left with –4 < -2).

A

Before: 10 kg, v_o = 4 m/s

After: 10 kg, v_f = 0 m/s

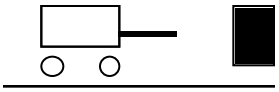


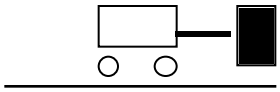


B

Before: 10 kg, v_o = 3 m/s

After: 10 kg, v_f = -1 m/s

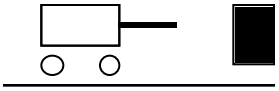


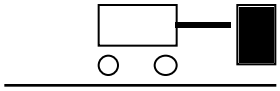


C

Before: 5 kg, v_o = 5 m/s

After: 5 kg, v_f = -3 m/s

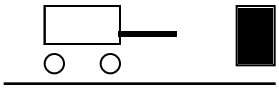


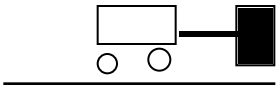


D

Before: 20 kg, v_o = 2 m/s

After: 20 kg, v_f = 0 m/s

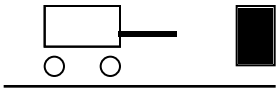


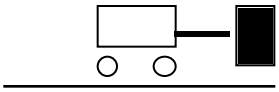


E

Before: 20 kg, v_o = 1 m/s

After: 20 kg, v_f = -1 m/s

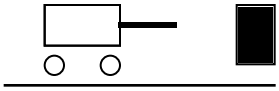


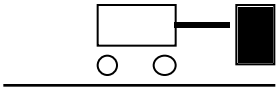


F

Before: 10 kg, v_o = 2 m/s

After: 10 kg, v_f = -2 m/s





Greatest 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ Least

Or, the work done on the barriers by the carts is the same for all these cases._____

Or, there is no work done on the barrier by the carts for all these cases._____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Guessed					Sure				Very Sure
1	2	3	4	5	6	7	8	9	10

[62] T. O'Kuma, C. Hieggelke