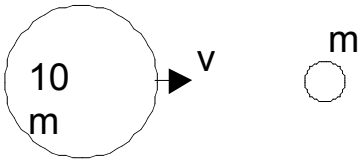
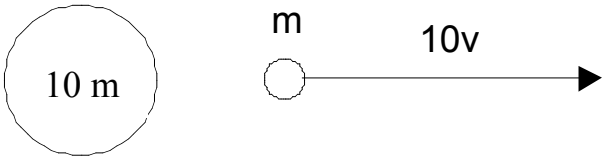
A big ball, mass M=10m, speed v, strikes a small ball, mass m, at rest. Could the following occur: The big ball comes to a complete stop and the small ball takes off with speed 10v?





A: Yes, this can occur.
B: No, it cannot occur because it would violate momentum conservation
C: No, it cannot occur because it would violate conservation of energy.

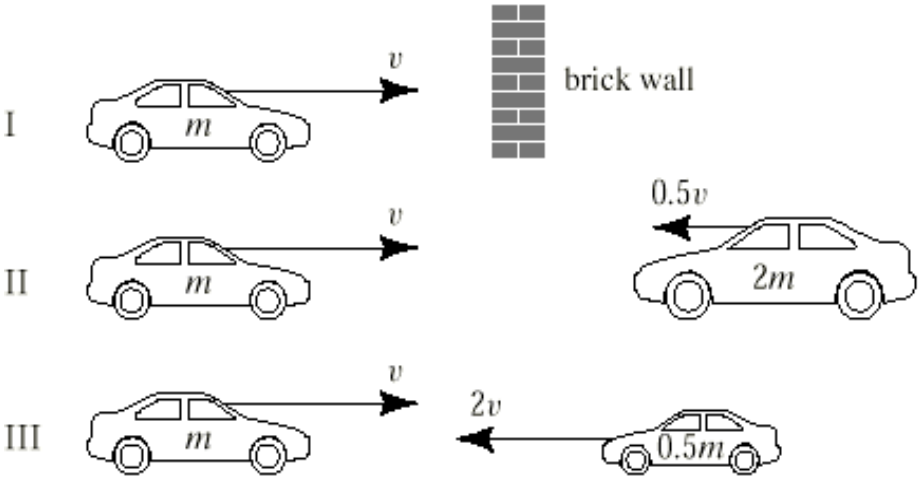
10-16

Two people on roller blades throw a ball back and forth. After a couple of throws, when the first thrower once again is holding the ball, they are (ignore friction)

A: standing still, where they were initially.
B: standing still, farther away from each other.
C: standing still, closer together than initially.
D: moving away from each other.
E: moving toward each other.

10-18

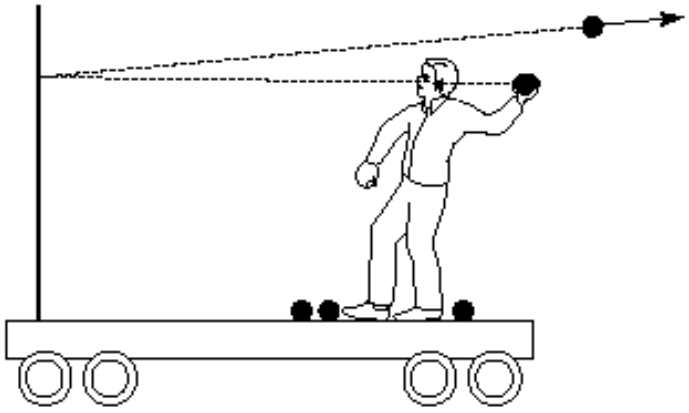
If all three collisions in the figure shown here are *totally inelastic*, which bring(s) the car on the left to a halt?



A: I B: II C: III
D: II,III only E: All three.

10-20

Suppose you are on a cart, initially at rest on a track with very little friction. You throw balls at a partition that is rigidly mounted on the cart. If the balls bounce straight back as shown in the figure, is the cart put in motion?



A: Yes, it moves to the right.
B: Yes, it moves to the left.
C: No, it remains in place.

Q8.2

You are testing a new car using crash test dummies. Consider two ways to slow the car from 90 km/h (56 mi/h) to a complete stop:

(i) You let the car slam into a wall, bringing it to a sudden stop.

(ii) You let the car plow into a giant tub of gelatin so that it comes to a gradual halt.

In which case is there a greater *impulse* of the net force on the car?

A. in case (i)

B. in case (ii)

C. The impulse is the same in both cases.

D. not enough information given to decide