

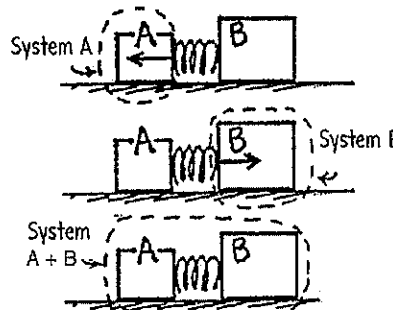
CONCEPTUAL *Physics* PRACTICE PAGE

Chapter 6 Momentum Systems

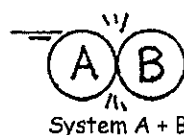
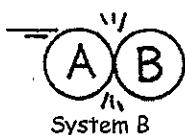
1. When the compressed spring is released, Blocks A and B will slide apart. There are three systems to consider, indicated by the closed dashed lines below—A, B, and A + B. Ignore the vertical forces of gravity and the support force of the table.



- a. Does an external force act on System A? [Y] [N]
Will the momentum of System A change? [Y] [N]
- b. Does an external force act on System B? [Y] [N]
Will the momentum of System B change? [Y] [N]
- c. Does an external force act on System A + B? [Y] [N]
Will the momentum of System A + B change? [Y] [N]

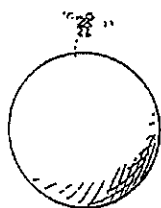


2. Billiard ball A collides with billiard ball B at rest. Isolate each system with a closed dashed line. Draw only the external force vectors that act on each system.



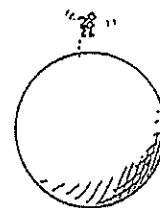
Note that external forces on System A and System B are internal to System A+B, so they cancel!

- a. Upon collision, the momentum of System A [increases] [decreases] [remains unchanged].
- b. Upon collision, the momentum of System B [increases] [decreases] [remains unchanged].
- c. Upon collision, the momentum of System A + B [increases] [decreases] [remains unchanged].



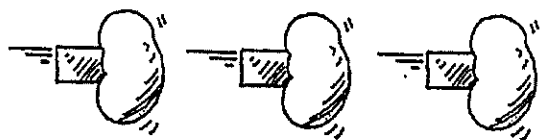
3. a. A girl jumps upward. In the left sketch, draw a closed dashed line to indicate the system of the girl.

- Is there an external force acting on her? [Y] [N]
- Does her momentum change? [Y] [N]
- Is the girl's momentum conserved? [Y] [N]



b. In the right sketch, draw a closed dashed line to indicate the system (girl + Earth). Is there an external force acting on the system due to the interaction between the girl and Earth? [Y] [N]

4. A block strikes a blob of jelly. Isolate three systems with a closed dashed line and show the external force on each. In which system is momentum conserved?



5. A truck crashes into a wall. Isolate three systems with a closed dashed line and show the external force on each. In which system is momentum conserved?



thanx to Cedric Linder

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