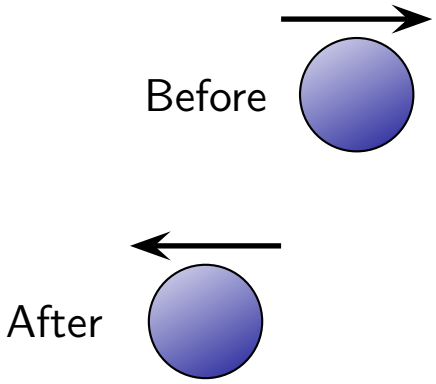
Question 1

A hockey puck travels horizontally to the right with speed $6.0\,\mathrm{m/s}$, hits something and after that travels horizontally to the left with $6.0\,\mathrm{m/s}$.



Which of the following is true about the puck?

1. The momentum after equals the momentum before.
2. The momentum after is opposite to the momentum before.
3. The momentum after is different to the momentum before but not opposite.

Question 2

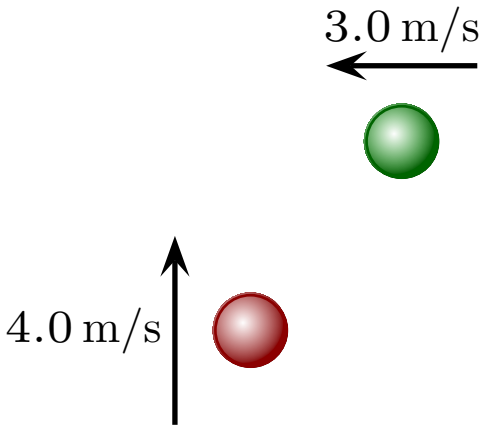
Two pool balls, each with mass $0.15\,\mathrm{kg}$, travel in straight lines directly toward each other with the same speeds, $10\,\mathrm{m/s}$.

Which of the following is the total momentum of the system of the two balls?

1. $0.0\,\mathrm{kgm/s}$
2. $1.5\,\mathrm{kgm/s}$
3. $-1.5\,\mathrm{kgm/s}$
4. $3.0\,\mathrm{kgm/s}$
5. $-3.0\,\mathrm{kgm/s}$

Question 3

Two $1.0\,\mathrm{kg}$ balls move perpendicular to each other.

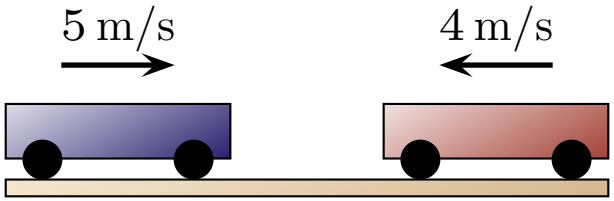


Which of the following is the magnitude of the total momentum of the system?

1. $1.0\,\mathrm{kgm/s}$
2. $3.0\,\mathrm{kgm/s}$
3. $4.0\,\mathrm{kgm/s}$
4. $5.0\,\mathrm{kgm/s}$
5. $7.0\,\mathrm{kgm/s}$

Question 4

A $4\,\mathrm{kg}$ cart moves to the right with speed $5\,\mathrm{m/s}$. A $6\,\mathrm{kg}$ cart moves to the left with speed $4\,\mathrm{m/s}$. The two carts stick together.



Which of the following best describes the carts after the collision?

1. They will be at rest.
2. Both carts will *definitely* move right.
3. Both carts will *definitely* move left.
4. Whether the carts move left or right depends on the severity of the collision.