

## Collisions

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## Collisions

- During most collisions, we usually don't know how force varies with time, so analysis becomes either very difficult or impossible.
- In **ALL** collisions, momentum is conserved.
- If no heat is produced in the collision, then kinetic energy is conserved as well.

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## Elastic Collisions

- If kinetic energy is conserved, then we have what is called an **elastic collision**.
- Some kinetic energy may be momentarily stored during the collision as elastic potential energy, but the kinetic energy before is equal to the kinetic energy after.

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## Inelastic Collisions

- If kinetic energy is not conserved, then we have an **inelastic collision**.
- In an inelastic collision, some of the initial kinetic energy is transformed into potential or thermal energy.
- The inverse can also be true.
  - Nuclear reactions
  - Explosions

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- If two objects stick together as a result of the collision, the collision is said to be completely inelastic.
  - Two colliding balls of putty
  - Two railway cars

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Remember that  
**momentum is conserved in every collision.**

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