HOW TO SOLVE COLLISION PROBLEMS

1. Choose axis.
2. Identify initial (before collision) momentum of each object involved in resolution into the chosen axis (i.e. positive or negative).
3. Identify final (after collision) momentum of each object involved in resolution into the chosen axis. If objects stick together after collision treat them as one object with the mass equal sum of the masses of objects involved.
4. Equalise sum of the initial momentum of object involved to the sum of the final momentum (taking in the account positive or negative sign according to resolution into axis).
5. Do math to solve equations and find unknown quantities. If question asking about impulse or force, use equation $\vec{F}\Delta t = \Delta\vec{p}$

   Remember to use change of momentum of the single object and calculate change of momentum as final minus initial in resolution in chosen axis.
6. To find out is collision elastic or inelastic, calculate initial total kinetic energy (sum of kinetic energy of all objects involved before collision) and final total kinetic energy. If they are equal collision is elastic, if not – inelastic. By the way, if objects stick together after collision, it always inelastic.

Yuriy Verkhatsky