N/S/D

Momentum Conservation Worksheet - Elastic/Inelastic Collisions

Typical Elastic Collisions:

- One beach ball bounces off another
- Cue ball hits 8 ball. Cue ball stops. 8 ball goes.

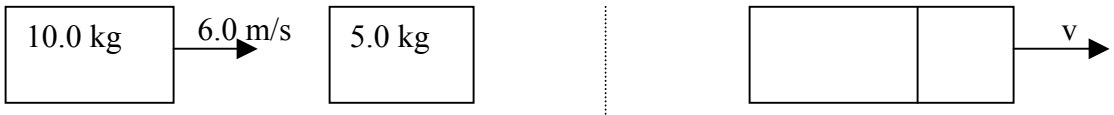
Typical Inelastic Collisions:

- Tractor trailer truck hits bug which sticks to windshield.
- Ty Law intercepts a pass.

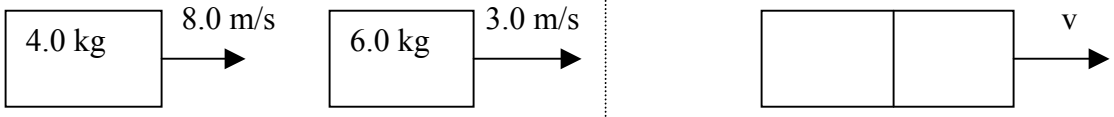
1. In empty space 2 identical spaceships are both moving. Is it possible for their total momentum to be zero? If yes, how? If no, why not?

2. Use the conservation of momentum to find the value of the variable in each diagram (*select any four parts to complete*).

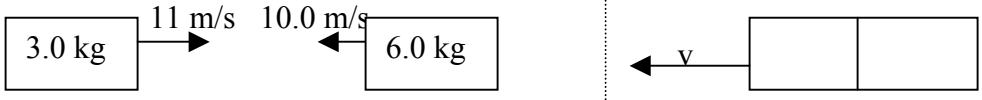
a)



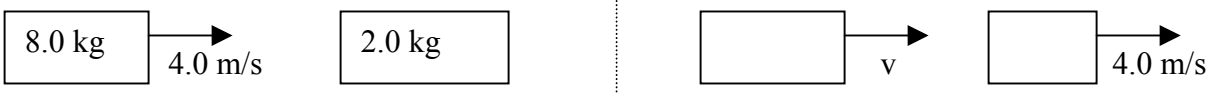
b)



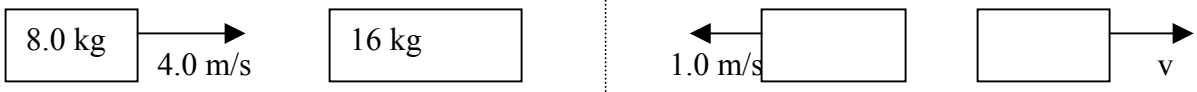
c)



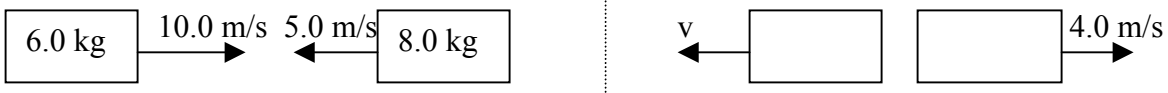
d)



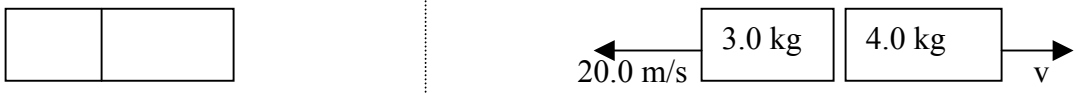
e)



f)



g)



h)

3. (**Sections C & E**) A 2300 kg truck going 31 m/s smashes into an 1100 kg parked car. What is the velocity of the combined mass immediately after the collision?

4. (**Sections C & E**) A 1900 kg car going north hits a 1500 kg car going east. Skid marks show that the combined mass went 45° N of E at 12 m/s after the collision. How fast was each car going? (*Hint: Total momentum is the **vector sum** of the individual momenta. That means that the momentum **components** must be the same before and after the collision.*)