

Answers to the power point review:

1. For both of these, the bug and the car will exert the same force on each other and the rocket and the fuel will exert the same force on each other (ACTION REACTION...Newton's 3rd Law)
2. The bug has more momentum because it is actually moving. The car has more momentum
3. In an elastic collision, particles bounce off of each other. In an inelastic collision, the particles stick together.
4. An internal force is a force acting between the two objects in the system. An external force is a force that is acting on one of the objects by something else that is not a part of the system. An example of an internal force from the lab would be the plunger from one car hitting the other car. An example of an external force from the lab would be the friction from the table acting on the wheels.
5. The velocities must be the same because they have the same mass, are going in opposite directions and momentum must be conserved.
6. The one with double the mass would have to have half of the velocity in order for the momentums to be the same and for the momentum to be conserved.
7. Catcher moves back at 0.128 m/s
8. Force is about 44000N
9. The airbag means that it will take longer for you to come to a stop. Since you will have the same change in momentum, it will reduce the amount of force needed to bring you to a stop.
10. 9.6 m/s

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1. Total momentum is 4 kgm/s to the right. Total momentum is 16 kgm/s to the right.
2. $F = 18.7 \text{ N}$ for both
3. Time is 0.01 s, $a = 2600 \text{ m/s/s}$, $d = 0.39 \text{ m}$
4. Internal: plunger hitting the car, external: gravity, friction, normal
5. $V = 3.44 \text{ m/s}$
6. SKIP
7. Total momentum is 14400 kgm/s the velocity of the second car is 4.8 m/s
8. SKIP