

### Momentum Questions

Answer the following questions individually and then when told to, begin working towards a group answer. Put the group answer on a whiteboard.

- 1) When an apple falls from a tree and strikes the ground without bouncing, what becomes of the momentum?
  
- 2) If a Mack truck and a VW bug are in collision, which experiences a greater force? A greater impulse? A greater change in velocity?
  
- 3) You are sitting in the middle of a frozen lake. However, this is a special lake, in that the ice is frictionless. You only have your clothes with you. How do you get to the edge of the lake? Explain your answer.
  
- 4) A lunar vehicle is tested on earth at a speed of 10 km/h. When it travels on the moon with the same speed, is its momentum more, less or the same?

Questions 5 and 6 refer to the video we watched last class.

- 5) Describe other examples where momentum change is reduced by applying a smaller collision force over a longer impact time (or where things “give away” during a collision to lessen the impact force)?
  
- 6) Ever tried to stop a 150 pound (68kg) cannonball fired towards you at 30 mph (48km/h)? No, probably not or you would not be in class today. But you may have tried to brace yourself in a car collision, or not worn a seatbelt in a car. How are the two situations similar?
  
- 7) Why is a punch more forceful with a bare fist than with a boxing glove?