

- 1.) Which has more momentum, a supertanker tied securely at the dock or a falling raindrop?
  
- 2.) Is the momentum of a car traveling south different from that of an identical car moving north at the same speed? Explain.
  
- 3.) A pitcher throws a fastball to a catcher. Ignoring air resistance, which player exerts the larger impulse on the ball?
  
- 4.) When you jump off something like a table you let your legs bend at the knees when you strike the floor. Explain why you would do this.
  
- 5.) To catch a fast moving baseball barehanded should your hand be moving or should it be still at the time of contact? Why?
  
- 6.) Is it possible for an object to obtain a larger impulse from a smaller force than it does from a larger force?
  
- 7.) An archer shoots arrows at a target. Some arrows stick in the target while others bounce back off. If the mass and velocity of each arrow is the same, which arrows would give the greater impulse to the target?

8.) Two-soccer players come from opposite directions. They leap in the air to try to head the ball, but collide with each other instead, coming to rest in midair. What can be concluded about their original momenta?

9.) Someone throws a heavy ball to you when you are standing on a skateboard. You catch it and roll backward with the skateboard. If you were standing on the ground, however, you would be able to avoid moving. Explain both situations using the law of conservation of momentum. (Keep in mind an isolated system)