

4.6 Review Questions

1. Only an outside unbalanced force can make an object move. How then can you walk across the floor? What is the outside force?
2. A 400 Kg car and a 1500 Kg truck are in a head-on collision. They were both traveling at a speed of 15 m/s in opposite directions.
 - a. Which experienced the greater force when they hit? Why?
 - b. Which experienced the greater acceleration when they hit? Why?
3. Why did the cannons on ships have to be tied down when fired?
4. There are 7 billion (7×10^9) people on the earth. If every one of them were to jump up at the same time from the same spot on Earth, would the earth move (accelerate)? Assume that they all push with a force of 1000 N. Earth's mass is 5.9×10^{24} Kg.
5. How do you stop a rocket that is in orbit?
6. A person is standing in the middle of an ice pond. The ice is so slick that there is no friction between the person and the surface. How could he get off the pond?
7. Why is it that for a person to go forward she must push backwards?
8. A truck (mass = 2000 kg) collides with your teacher (m = 83 kg).
 - a. Which experiences the greater force? Why?
 - b. Which has its motion changed more? Why?
 - c. If the truck hits the teacher with a force of 2000 N, what is the teacher's acceleration?