

Forces Non-Textbook Homework Problems - *Answer and turn in on your own paper.*

9/10/14

1. Asteroids have been moving through space for billions of years. What keeps them moving?
2. Many automobile passengers have suffered neck injuries when struck by cars from behind. How does Newton's First Law apply here? How do headrests help to guard against this type of injury?
3. Can you say that no force acts on a body at rest? Or is it correct to say that no *net* force acts on it? What's the difference?

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4. Suppose a cart is being moved by a certain net force. If the net force is doubled, what happens to the cart's acceleration?
5. A shopping cart is being pushed with a certain net force. If I dump a bunch of canned goods in it such that its mass is tripled, what happens to its acceleration (assuming same net force as before)?
6. A certain force applied to a 2 kg mass accelerates the mass at 3 m/s^2 . How much acceleration will the same force make on a 4 kg mass?

→ ALSO DO TEXTBOOK PROBLEM Ch.4 # 2 ←

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7. A 3 kg book sits on a flat table.
 - a. What is the weight of the book (force of gravity)?
 - b. Does the table push up on the book? Why?
 - c. What is the normal force on the book?
8. For each action force described below, write the reaction force that completes the pair.
 - a. A man pushes a box to the right.
 - b. A woman pulls a sled North.
 - c. A monkey pulls down on a tree branch.
 - d. A swimmer pushes backwards on the water.
9. A bicycle and a massive truck have a head-on collision.
 - a. Upon which vehicle is the impact for greater? Why?
 - b. Which vehicle undergoes the greater change in motion? Why?
10. If you step off a ledge, the earth pulls down on you.
 - a. Do you accelerate toward the earth?
 - b. Do you pull on the earth? Which way?

c. Does the earth accelerate toward you? Explain.