Name:_____ Date:_____

Mr. Croom's Physics Chapter 4: Force and the Law of Motion

Newton's Third Law 1

Solve the following problems

1. For each of the following forces, give the reaction force required by Newton's 3rd Law:
   a. The force of a hammer on a nail

   b. The force of gravity pulling down a book

   c. The force of a helicopter blade pushing down on the air

   d. The force of air resistance acting on a thrown baseball

2. How can action and reaction forces produce very different accelerations? Give a few examples.

3. When you drop an object near the surface of the Earth, it is accelerated in a straight line downward to the Earth. By Newton's third law, can you also assume that a force is exerted on the earth and that the earth should be accelerated upward toward the object? Can you observe this acceleration? Explain.

4. (Serway, p. 134, # 5) If a small sports car collies head-on with a massive truck, which vehicle experiences the greater impact force? Which vehicles experience the greater acceleration? Explain your answer.

5. (Serway, p. 149, #17) A space explorer is moving through space far from any planet and notices a large rock, taken as a specimen from an alien planet floating around the cabin of the ship. Should the explorer push it gently or kick it toward the storage compartment? Why?

6. (Serway, p. 149, # 18) Explain why a rope climber must pull downward on the rope in order to move upward. Discuss the force exerted by the climbers arms in relation to the weight on the