

HW #3
SP211 Vanhoy

Due Mon 14 Sept

Eleven Book problems

Serway Ch 5 Problems: 7, 9, 23, 26, 28, 42, 54, 57, 60, 62, 67

'Two' multiple choice

1. For each item below, state whether the pair of forces described forms an "action-reaction pair" (Y=yes, they fit the definition, N=no, they don't)

- A horse pulls a cart. The force on the cart by the horse and the force on the horse by the cart.
- A dog sleeps on the floor. The force on the dog by the earth's gravity and the force on the dog by the floor.
- A ship accelerates as it leaves the pier. The force on the ship by the water and the force on the water by the ship.
- Michael Jordan as he launches himself into the air. The force on his feet by the floor and the force on his body by the earth's gravity.
- A taut rope holds a ship alongside a dock. The force on the rope by the ship and the force on the rope by the dock.
- An aircraft flying at constant velocity. The force on the craft by the air and the force on the air by the craft.
- An aircraft flying at constant velocity. The force on the craft by earth's gravity and the force on the craft by the air.
- Mike Tyson punching you in the nose. The force on your nose by his fist and the force on his fist by your nose.
- A VW Rabbit collides head-on with a fully loaded tractor trailer. Both are moving at 55 mph. The force on the Rabbit by the truck and the force on the truck by the Rabbit.

2. Consider a car at rest. We can conclude that the downward gravitational pull of Earth on the car and the upward contact force of Earth on it are equal and opposite because:

- a) the two forces form an action-reaction pair.
- b) the acceleration of the car is zero.
- c) neither of the above.