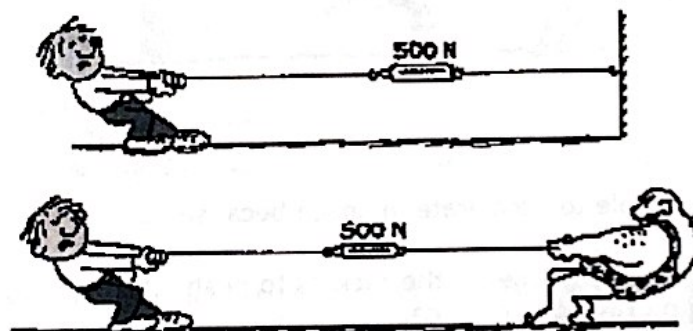


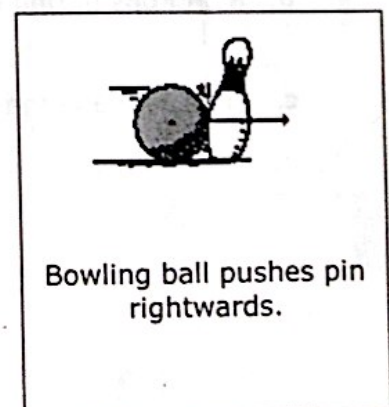
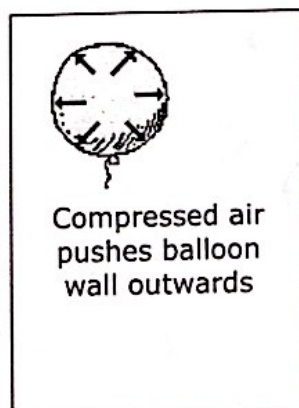
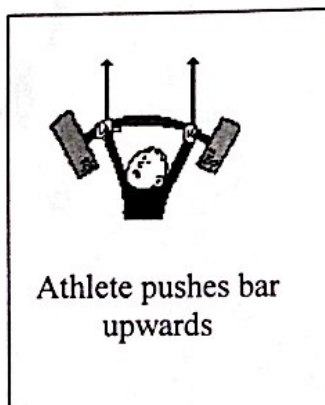
SPH 3UO
Newton's Third Law-Practice Set

Name: _____
Date: _____

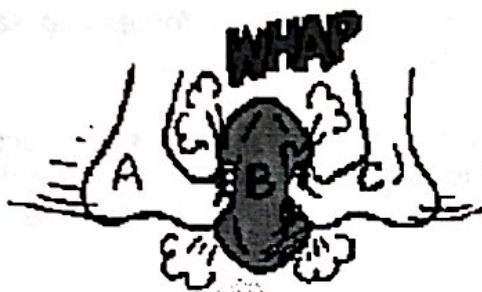
1. While driving, Anna Litical observed a bug striking the windshield of her car. Obviously, a case of Newton's third law of motion. The bug hit the windshield and the windshield hit the bug. Which of the two forces is greater: the force on the bug or the force on the windshield?
2. A gun recoils when it is fired. The recoil is the result of action-reaction force pairs. As the gases from the gunpowder explosion expand, the gun pushes the bullet forwards and the bullet pushes the gun backwards. The acceleration of the recoiling gun is ...
 - a. greater than the acceleration of the bullet.
 - b. smaller than the acceleration of the bullet.
 - c. the same size as the acceleration of the bullet.
3. In the top picture, a physics student is pulling upon a rope which is attached to a wall. In the bottom picture, the physics student is pulling upon a rope which is held by the Strongman. In each case, the force scale reads 500 Newtons. The physics student is pulling



- a. with more force when the rope is attached to the wall.
 - b. with more force when the rope is attached to the Strongman.
 - c. the same force in each case.
4. Consider the following three examples. The action force is stated; determine the reaction force.



5. Consider the interaction depicted below between foot A, ball B, and foot C. The three objects interact simultaneously (at the same time). Identify the two pairs of action-reaction forces. Use the notation "foot A", "foot C", and "ball B" in your statements.



6. Identify at least five pairs of action-reaction forces in the following diagram.



7. Rockets are unable to accelerate in space because ...
- there is no air in space for the rockets to push off of.
 - there is no gravity in space.
 - there is no air resistance in space.
 - ... nonsense! Rockets do accelerate in space.

8. Identify the action-reaction pair of forces in each of these cases:

- A bird flapping its wings.
- Raindrops hitting the roof
- The Earth and the Moon