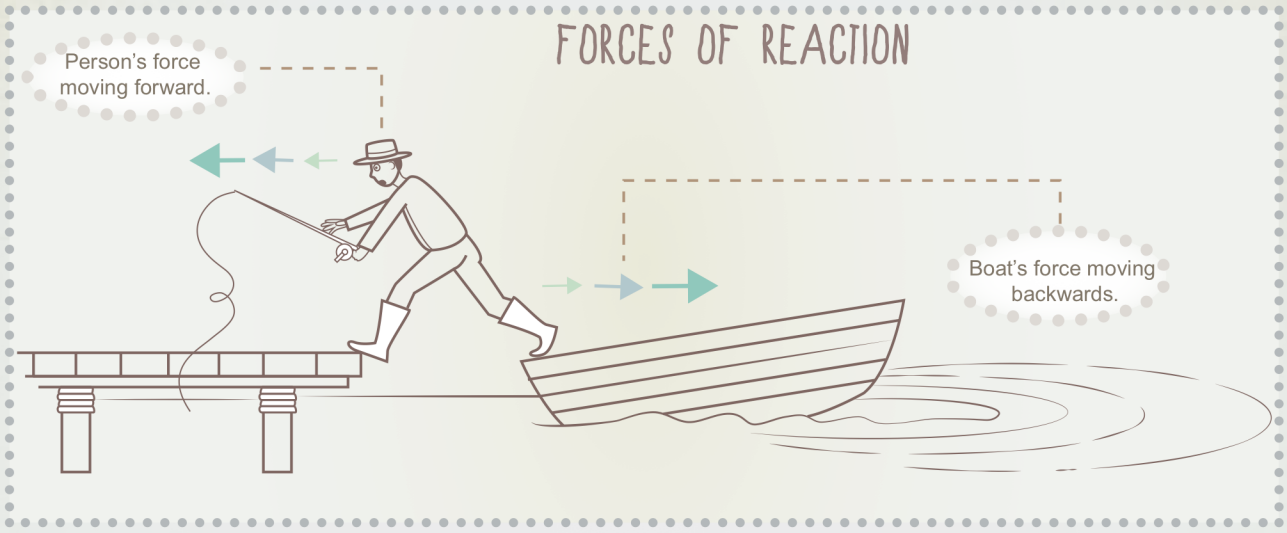
Answer Key

Newton's Third Law of Motion The Action-Reaction Law

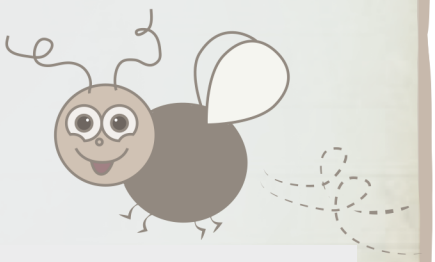
ACTION-REACTION LAW

To every action there is always an equal and opposite reaction.

THINK ABOUT IT!



CHALLENGE QUESTIONS!



1. You're driving down the road, and a bug hits the windshield of the car! The bug hits the car and the car hits the bug. Which of the two forces is greater: The force on the bug or the force on the car?

The force on the bug and the force on the car are equal. Newton's Third Law states that for every action, there is an equal and opposite reaction. (The fact that the bug splatters means that it has a smaller mass, so it is less able to handle the acceleration of the car's larger mass in the impact.)

2. Many people know that a rifle recoils, or jerks back when fired. This is the result of Newton's action-reaction law. A gunpowder blast creates hot gases that expand outward allowing the rifle to push forward on the bullet, and the bullet pushes backwards upon the rifle. The acceleration of the recoiling rifle is _____ than the acceleration of the bullet.:

a) greater
b) smaller
c) the same size