

**Newton's 3rd Law: For a force there is always an equal and opposite reaction: or the forces of two bodies on each other are always equal and are directed in opposite directions.**

**Problem**

1. If you push off the ground with a force of 350 N when you jump upward, what force pushes Earth downward?
2. A pair of blocks, one 2 times as massive as the other, are connected by a compressed spring. When the spring is released, the blocks fly apart. Compared to the heavier block, how many times as fast does the lighter block accelerate?
3. Two people have a tug-of-war on low-friction ice. One person has 2 times the mass of the other. Compared to the lighter person, how many times as fast does the heavier person accelerate?
4. A 60-kg person on in-line skates pushes against a wall with a force of 30 N and recoils. What acceleration does that person experience?
5. A fighter punches a sheet of paper in midair, and brings it from rest up to a speed of 40 m/s in 0.08 s. What is the force of impact on the paper if the mass of the paper is 0.01 kg?
6. What engine thrust (in newtons) is required for a rocket of mass 35 kg to leave the launching pad?