

## Module 04 - Lesson 5

### Newton's Second law

**Question 1:** A subway train of mass  $1.0 \times 10^6$  kg accelerates at  $2.0 \text{ m/s}^2$ . Find the magnitude of the force required to cause this acceleration.

**Question 2:** After releasing her parachute, a 60-kg skydiver descends with a downwards acceleration of magnitude  $8.0 \text{ m/s}^2$ . What force does air exert on her parachute at that instant in time?

**Problem:** A soccer player accelerates a soccer-ball from rest to a speed of  $20 \text{ m/s}$ . If the player is in contact with the ball for  $0.2 \text{ s}$  and the ball has a mass of  $430 \text{ g}$ , find the average force the player exerts on the ball?