## Answer on Question #45654, Physics, Mechanics | Kinematics | Dynamics

A man of mass m=60 kg is standing on the floor of an elevator which is connected to a light pulley system. The mass of the elevator is 30 kg. The friction between the rope and the pulley can be neglected. Find the force acted by the man on the floor of the elevator when the elevator is descending with uniform speed?

## Solution:



The interaction of the two forces - the upward normal force and the downward force of gravity - can be thought of as a tug-of-war. The net force acting upon the person indicates who wins the tug-of-war (the up force or the down force) and by how much.

In our case, when the elevator is descending with uniform speed (acceleration is equal zero)

$$F_N = F_q = mg = 60 \cdot 9.81 = 588.6 \text{ N}$$

**Answer:**  $F_g = 588.6$  N.