Module 04 - Lesson 2

Everyday Forces

Question 1: The free-fall acceleration on the surface of the Moon is about 1.6 m/s^2. Find the weight of a 68-kg astronaut that stands on the Moon's surface.

Question 2: A weight 15 N sits at rest on a frictionless horizontal surface. Find the magnitude of the normal force acting on the crate when (a) when no other forces besides gravity and the normal force act on the crate (Fig. 1a), (b) when the crate is pushed by a vertical force $F = 10$ N, in addition to gravity and the normal force (Fig. 1b).
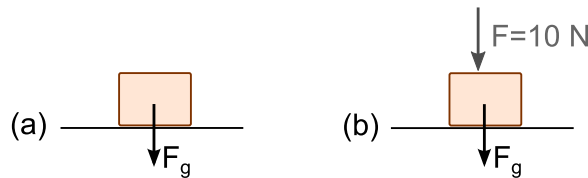

FIG. 1: Crate on horizontal surface.

Problem: As shown in Fig. 2 a 2.0-kg box is attached to a spring scale. (a) If the spring scale is calibrated in newtons, what will be the reading on the scale? (b) Find the spring constant of the scale if the spring is stretched by $\Delta x = 2$ cm by the box.
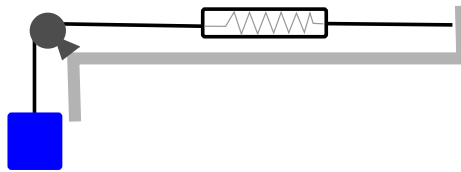

FIG. 2: Spring scale