Answer on Question #39237, Physics, Mechanics | Kinematics | Dynamics

Question:

You push your physics book 1.50m long a horizontal table top with a horizontal force of 2.40N .the opposing force of friction is 0.600N.

a)how much work does your 2.40N force do on the book?

b)what is the work done in the book by the friction force?

Answer:

Mathematically, work can be expressed by the following equation:

$$W = Fd\cos\theta$$

where F is the force, d is the displacement, and the angle θ is defined as the angle between the force and the displacement vector.

a) For 2.40N force $\theta = 0$:

$$W = Fd\cos 0 = 2.40\ N * 1.50\ m = 3.60\ J$$

Answer: $3.60\ J$

b) For friction force $\theta = 180$:

$$W = Fd\cos 180 = -0.600\ N * 1.50\ m = -0.900\ J$$

Answer: $-0.900\ J$