Answer on Question 53354, Physics, Other

Question:

Kyle pushes a $50kg$ sack of rice across a level floor by a horizontal force of $35.0N$ against a frictional force of $12.0N$. He succeeded in moving the sack a distance of $5.0m$. How much work is done by

a) Kyle

b) friction

c) force of gravity

Solution:

a) Work done by Kyle:

$$W_{Kyle} = F_h s = 35.0N \cdot 5.0m = 175J.$$

b) Work done by the frictional force (we take the friction force with sign minus because it have opposing direction to the horizontal force):

$$W_{fr} = F_{fr} s = -12.0N \cdot 5.0m = -60J.$$

c) Work done by the force of gravity ($h = 0$, sack of rice pushed across a level floor):

$$W_g = mgh = 50kg \cdot 9.8\frac{m}{s^2} \cdot 0m = 0.$$

Therefore, the force of gravity does not do any work on the sack of rice.

Answer:

a) $W_{Kyle} = 175J.$

b) $W_{fr} = -60J.$

c) The force of gravity does not do any work on the sack of rice.