## Answer on Question \#42816, Physics, Mechanics | Kinematics | Dynamics

A man pushes a lawnmower with a force of 170 N at an angle of $37^{\circ}$ down from the horizontal. The lawn is 12.0 m wide and requires 16 complete trips across and back. How much work does he do?

## Solution:



Given:

$$
\begin{aligned}
& F=170 \mathrm{~N}, \\
& \theta=37^{\circ}, \\
& s=12 \mathrm{~m}, \\
& N=16
\end{aligned}
$$

In order to accomplish work on an object there must be a force exerted on the object and it must move in the direction of the force.

$$
\text { Work }=F \cdot \cos \theta \cdot d
$$

where $d$ is distance.
The distance $d$ is

$$
d=N s=16 \cdot 12=192 \mathrm{~m}
$$

Thus,

$$
\text { Work }=170 \cdot \cos 37^{\circ} \cdot 192=26067 \mathrm{~J} \approx 26 \mathrm{~kJ}
$$

Answer. $W=26067 \mathrm{~J}$.

