16. (a) The component of the force of gravity exerted on the ice block (of mass m) along the incline is $mg\sin\theta$, where $\theta = \sin^{-1}(0.91/1.5)$ gives the angle of inclination for the inclined plane. Since the ice block slides down with uniform velocity, the worker must exert a force $\vec{F}$ "uphill" with a magnitude equal to $mg\sin\theta$. Consequently,

$$F = mg\sin\theta = (45\,\text{kg})\left(9.8\,\text{m/s}^2\right)\left(\frac{0.91\,\text{m}}{1.5\,\text{m}}\right) = 2.7\times 10^2\ \text{N}\ .$$

(b) Since the "downhill" displacement is opposite to $\vec{F}$, the work done by the worker is

$$W_1 = -\left(2.7\times 10^2\,\text{N}\right)(1.5\,\text{m}) = -4.0\times 10^2\ \text{J}\ .$$

(c) Since the displacement has a vertically downward component of magnitude 0.91 m (in the same direction as the force of gravity), we find the work done by gravity to be

$$W_2 = (45\,\text{kg})\left(9.8\,\text{m/s}^2\right)(0.91\,\text{m}) = 4.0\ \times 10^2\ \text{J}\ .$$

(d) Since $\vec{N}$ is perpendicular to the direction of motion of the block, and $\cos 90° = 0$, work done by the normal force is $W_3 = 0$ by Eq. 7-7.

(e) The resultant force $\vec{F}_{\text{net}}$ is zero since there is no acceleration. Thus, it's work is zero, as can be checked by adding the above results $W_1 + W_2 + W_3 = 0$.