11. (a) The forces are constant, so the work done by any one of them is given by $W = \vec{F} \cdot \vec{d}$, where $\vec{d}$ is the displacement. Force $\vec{F}_1$ is in the direction of the displacement, so

$$W_1 = F_1 d \cos\phi_1 = (5.00\,\mathrm{N})(3.00\,\mathrm{m})\cos 0^\circ = 15.0\ \mathrm{J}\ .$$

Force $\vec{F}_2$ makes an angle of 120° with the displacement, so

$$W_2 = F_2 d \cos\phi_2 = (9.00\,\mathrm{N})(3.00\,\mathrm{m})\cos 120^\circ = -13.5\ \mathrm{J}\ .$$

Force $\vec{F}_3$ is perpendicular to the displacement, so $W_3 = F_3 d \cos\phi_3 = 0$ since $\cos 90^\circ = 0$. The net work done by the three forces is

$$W = W_1 + W_2 + W_3 = 15.0\,\mathrm{J} - 13.5\,\mathrm{J} + 0 = +1.5\ \mathrm{J}\ .$$

(b) If no other forces do work on the box, its kinetic energy increases by 1.5 J during the displacement.