40. (a) Using Eq. 7-8, we have

$$W_{applied} = (8.0\,\text{N})(0.70\,\text{m}) = 5.6\,\text{J}.$$

(b) Using Eq. 8-31, the thermal energy generated is

$$\Delta E_{th} = f_k d = (5.0\,\text{N})(0.70\,\text{m}) = 3.5\,\text{J}.$$