**Solution 1.18**

A resistance heater is used to heat water to desired temperature. The amount of electric energy used in kWh and kJ are to be determined.

***Analysis*** The resistance heater consumes electric energy at a rate of 4 kW or 4 kJ/s. Then the total amount of electric energy used in 3 hours becomes

Total energy = (Energy per unit time)(Time interval)

= (4 kW)(3 h)

= **12 kWh**

Noting that 1 kWh = (1 kJ/s)(3600 s) = 3600 kJ,

Total energy = (12 kWh)(3600 kJ/kWh)

= **43,200 kJ**

***Discussion*** Note kW is a unit for power whereas kWh is a unit for energy.