Question: In a certain city, electricity costs $0.13 per kW·h. What is the annual cost for electricity to power a lamp-post for 5.50 hours per day with (a) a 100.-watt incandescent light bulb (b) an energy efficient 25-watt fluorescent bulb that produces the same amount of light? Assume 1 year = 365 days.

Solution:

$$Annual\ cost(\$) = P(kW){\times}n(hours){\times}n(days)$$

a) 100 watt = 0.1 kW

$$Annual\ cost = 0.1\ kW{\times}5.50\ h{\times}365{\times}0.13\frac{\$}{kW \cdot h} = 26.1\$$$

b) 25 watt = 0.025 kW

$$Annual\ cost = 0.025kW{\times}5.50h{\times}365{\times}0.13\frac{\$}{kW \cdot h} = 6.52\$$$

Answer: a) 26.1$; b) 6.52$