# f_-_cost_of_electrical_energy_problems

Wednesday, April 17, 2019 9:29 AM

# The Cost of Electrical Energy Problems

1. Calculate the cost of using a 100 W incandescent light bulb for one year. The light bulb is on 5 h per day. The electricity rate is 10 cents/kWh or $0.10/kWh.

Given: P = 100 W = 0.1 kW

t = 5 h per day = 1825 h per year

electricity rate = $0.1 / kWh

What are we required to find? cost of using the bulb.

Solution:

| | |
|---|---|
| a) Which equation will we use? | C = kW · h · rate($) |
| b) Substitute given info into equation (with units). | C = (0.1 kW)(1825 h)($0.1 / kWh) |
| c) Calculate. Give answer with units. | C = $18.25 |

Concluding statement: The cost of using the bulb for 1 year is $18.25

2. Calculate the cost of using a 27 W fluorescent light bulb (which is just as bright as a 100 W incandescent light bulb)for one year. The light bulb is on 5 h per day. The electricity rate is 10 cents/kWh or $0.10/kWh.

Given: P = 27 W = 0.027 kW

t = 5 h per day = 1825 h per year

electricity rate = $0.10 / kWh

What are we required to find? cost of using the bulb

Solution:

| | |
|---|---|
| a) Which equation will we use? | |
| b) Substitute given info into equation (with units). | |
| c) Calculate. Give answer with units. | C = $4.93 |

Concluding statement: It costs $4.93 to use the bulb

3. How much money can be saved by using the fluorescent bulb instead of the incandescent bulb?

$13.32 (subtract)

4. After school each day, Sally uses her computer to do her homework. If she has an average of two hours of homework per night for 180 days of school per year, how many kilowatt-hours are consumed and what is the annual cost of using her computer? A computer and monitor use 270 Watts. Assume the electricity rate is 10 cents/kWh.

$C = P \cdot t \cdot rate$

$= (0.27\,kW)(360\,h)(\$0.10/kWh)$

$= \$9.72$