

Exercise A.9.129 Electricity Rates.

During summer months in 2018, Omaha Public Power District charged residential customers a monthly service charge of \$25, plus a usage charge of 10.06 ¢ per kilowatt-hour (kWh).

If one customer's monthly summer bills ranged from a low of \$140.69 to a high of \$231.23, over what range did usage vary (in kWh)?

Solution.

Let x be the number of kWh used in a month. Then the monthly charge in dollars (notice that we convert the usage charge to dollars as $10.06 \text{ ¢} = \$0.1006$ per kWh).

$$\$25 + x(\$0.1006) = \$(25 + 0.1006x).$$

So we consider the inequality

$$140.69 \leq 25 + 0.1006x \leq 231.23$$

$$\text{or } 115.69 \leq 0.1006x \leq 206.23$$

$$\text{or } \frac{115.69}{0.1006} \leq \frac{0.1006x}{0.1006} \leq \frac{206.23}{0.1006} \quad \text{or}$$

$1150 \leq x \leq 2050$. So the usage in kWh is in the interval $[1150, 2050]$.

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