

Solutions

2.1

: $E = P \times t$: $10 \text{ W} = 0.010 \text{ kW}$.

2.2

: total time equals daily hours times days.: $t = 5 \times 20 = 100 \text{ h}$.

2.3

: $E = Pt$: $E_{\text{new}} = 0.010 \times 100 = 1.0 \text{ kWh}$: reduction = $E_{\text{old}} - E_{\text{new}} = 6.0 - 1.0 = 5.0 \text{ kWh}$ under the supplied assumptions.

2.4

each: required brightness/lighting performance; installation compatibility or authorised safety review; tariff; purchase/installation cost; lifetime or reliability. Credit distinct relevant checks, with at least one suitability check and one financial input.

3.1

each: new lamp still uses estimated 1.0 kWh; no tariff supports the claimed RMB saving; power alone does not prove equal brightness; no-risk claim is unsupported; replacement needs school approval and authorised personnel; remaining uncertainty does not erase the bounded evidence of lower estimated energy use.

3.2

Local analytic rubric, 8 ×: state supplied time; give old energy; give new energy; give bounded reduction; reject monetary amount without tariff; require lighting/suitability checks; require cost checks; preserve approval and authorised installation; coherent truthful 80–110 word response. Example: “Using the classroom assumptions, both lamps operate for one hundred hours. The existing lamp uses an estimated 6.0 kilowatt-hours and the proposed lamp 1.0 kilowatt-hour, a reduction of 5.0 kilowatt-hours. This supports a bounded energy comparison, not a claim of zero use or a guaranteed monetary saving. A tariff and purchase and installation costs are needed for the financial assessment. The school should also check required brightness, compatibility and reliability before deciding whether the replacement is suitable. Any installation requires approval and authorised personnel. Uncertainty limits the conclusion but does not erase the useful estimate.”