

## Tea kettle

The rate of water evaporation is proportional to the power dissipated at the resistive element, namely  $i^2R$ . If  $i$  increases by a factor of 1.21, then power dissipation increases by a factor of  $(1.21)^2 = 1.46$  (three significant figures), so the rate of water evaporation increases to (two significant figures)

$$1.46 \times (0.41 \text{ cup/min}) = 0.60 \text{ cup/min.}$$

[[Note that there's no need to convert 0.41 cup/min to the SI units of liter/s. The ratio of 1.46 applies regardless of units.]]

*Grading:* 2 points for “rate proportional to power”; 2 points for  $i^2R$ ; 2 points for number; 2 points for two significant figures; 2 points for “cup/min” (either explicit or in text).