Answer on Question #44146-Physics-Electric Circuits

A light bulb is connected to a 260V potential, and produces 120-Watts of light and heat. What is the resistance of the wire in the light bulb?

Answer:

Electric power by the definition:
$P = U \cdot I$,

where *U* – voltage, *I* –current.

Current:

$I = \frac{U}{R}$,

where *U* – voltage, *R* –resistance.

Now we have:

$$P = \frac{U^2}{R}$$

We can find resistance of the wire:

$R = \frac{U^2}{P} = \frac{260 \cdot 260}{120} = \frac{67600}{120} = 563$ *ohm*