

Answer on Question #46724, Physics, Other

A current of 0.5A flowing through a wire produces 21J of heat in 1/2 min. The resistance of the wire is ----- ohms to 1 place of decimal

2.8Ω

3.2Ω

1.4Ω

4.6Ω

By the Joule's law:

$$Q = I^2 R t$$

Where Q – heat, t – time in seconds, R – wire resistance

$$R = \frac{Q}{I^2 t} = \frac{21J}{(0.5A)^2 \cdot 30s} = 2.8\Omega$$

Answer: the resistance of the wire is $R = 2.8\Omega$