## Answer on Question \#55629, Physics / Other

In an experiment to determine the relationship between the current I through a piece of tungsten wire and the potential difference V across it, the theoretical relationship used was $\mathrm{I}=\mathrm{kV} \mathrm{V}^{\mathrm{n}}$, where k and n are constants which may be obtained from a straight line graph of the form $\mathrm{y}=\mathrm{mx}$ $+c$, the symbols having their usual meaning. The value of $k$ can then be experimentally determined from $\qquad$
A. the slope of the graph of logl plotted on the vertical axis against $\log V$ plotted on the horizontal axis
B. the intercept on the vertical axis of the graph of logl plotted on the vertical axis against $\log \mathrm{V}$ plotted on the horizontal axis
C. the slope of the graph of I plotted on the vertical axis against $\mathrm{V}^{2}$ plotted on the horizontal axis
D. the intercept on the horizontal axis of the graph of I plotted on the vertical axis against $\mathrm{V}^{2}$ plotted on the horizontal axis

## Solution:

The corresponding linear equation for this experiment is

$$
\log I=n \log V+\log k
$$

From a straight line graph of the form

we can obtained that the value of $k$ can then be experimentally determined from the intercept on the vertical axis of the graph of logl plotted on the vertical axis against $\log V$ plotted on the horizontal axis.


Answer: B. the intercept on the vertical axis of the graph of logl plotted on the vertical axis against $\log V$ plotted on the horizontal axis

