

Prelab: The Voltage Divider

Print Name _____

Lab Section _____ Date _____ TA _____

Give answers to two decimal places.

Based on the information presented in the lab manual, and this equation, derive an expression for R_2 .

Show your work: $V_2 = \frac{R_2}{R_1 + R_2} V_{in}$

A voltage divider is built from two resistors in series. The first resistor, R_1 , has a resistance of $7.00\text{k}\Omega$. The second, R_2 , has a resistance of $3.00\text{k}\Omega$. There is a voltage of $V_{in} = 12.00$ volts applied across the two resistors in the divider. What is the output voltage V_2 of the divider at R_2 ? Show formulas used:

$V_2 =$ _____

We are building a second divider. We want V_2 to be one tenth of V_{in} . If R_1 is $18.00\text{M}\Omega$, what resistance should R_2 have? ($1.00\text{M}\Omega = 1.00 \times 10^6 \Omega$) Show formulas used:

$R_2 =$ _____