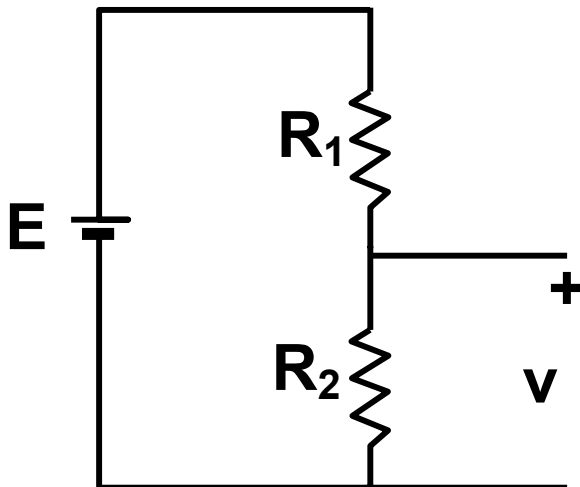


Problem Set 3

Due Thursday, January 30, 2003

1. A foil strain gauge has nominal resistance of 350 Ohms and a gauge factor of 2.12. This strain gauge is placed in the voltage divider circuit shown below and experiences tensile strains ranging from 0 to 15 microstrain. Plot a graph of the voltage output of the circuit as a function of strain. What is the sensitivity of this strain sensing circuit? Is there any offset voltage? If there is, how much offset is seen at zero strain?
2. Textbook Problem 2.7
3. Find the Thevenin equivalent circuit for the strain gauge in Problem 1 when the strain is 9 microstrain.



$$E = 1.5 \text{ V}$$

$$R_1 = 1,000 \ \Omega$$

$$R_2 = \text{The strain gauge}$$