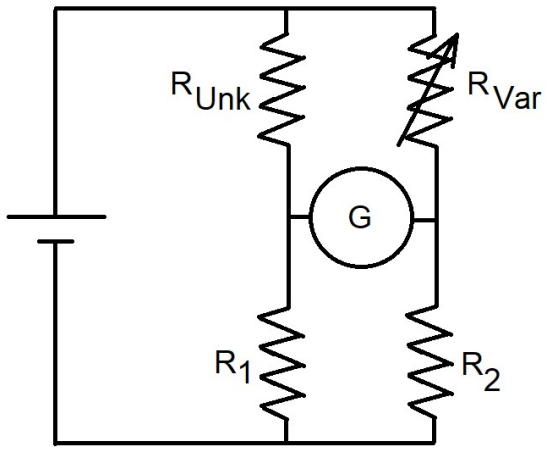
4-5)

Before the advent of ohmmeters (even the analog ones), unknown resistances ($R_{Unk}$) were measured using a *Wheatstone bridge*. The unknown resistance is placed into the circuit at right as shown. The values of $R_1$ and $R_2$ are extremely well known. The resistance of $R_{Var}$ is adjusted until the meter reads no current in the cross branch. The value of $R_{Var}$ is then read from a dial.




Show that $R_{Unk}$ can be found from

$$R_{Ukn} = \frac{R_1}{R_2} R_V \quad .$$

FYI: Often, since $R_1$ and $R_2$ were well known, the dial attached to $R_{Var}$ was instead marked off in values for $R_{Ukn}$, much more convenient.