

Experiment No. 6

Name Of The Experiment:

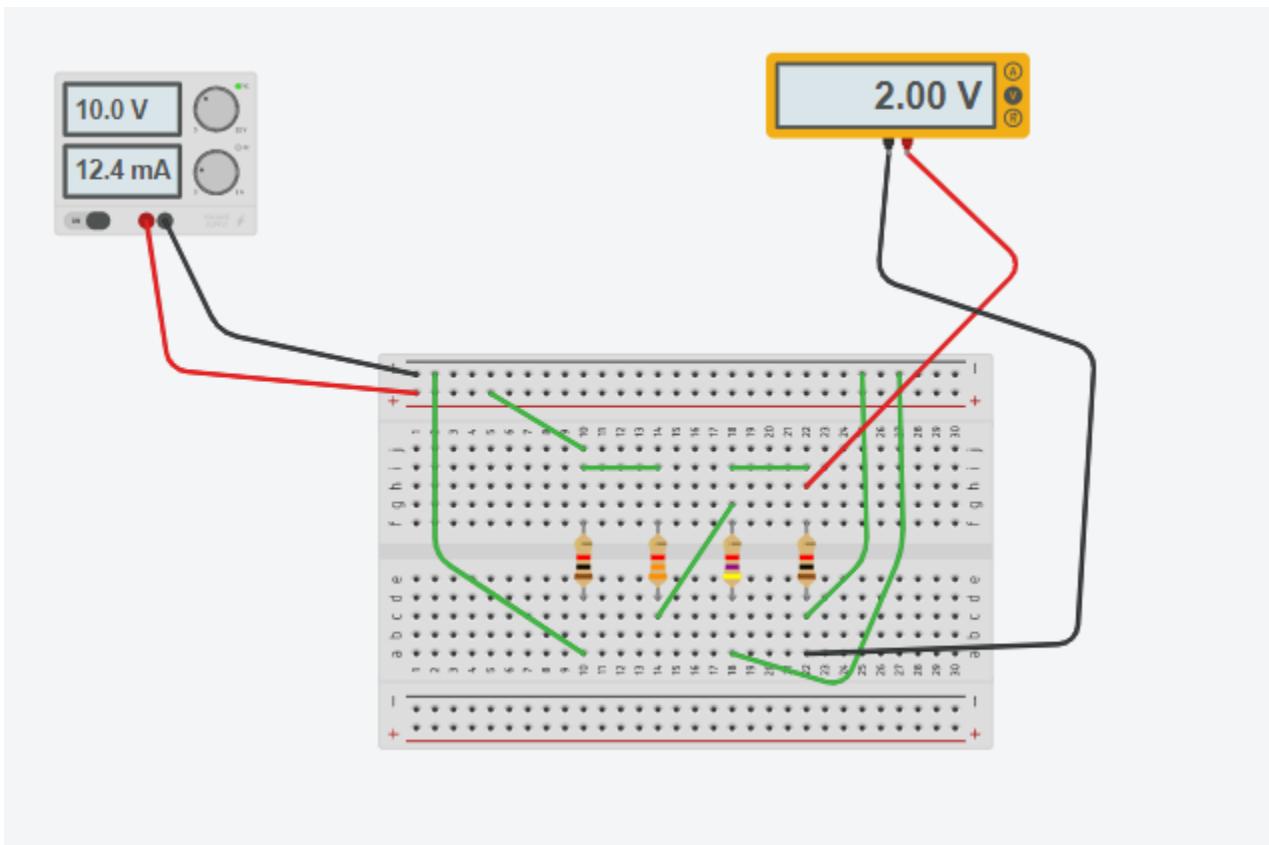
Verification of Thevenin's Theorem and Maximum Power Transfer Theorem PART 1:

OBJECTIVE :

To verify Thevenin's theorem with reference to a given circuit theoretically as well as experimentally.

Personal circuit:

For $1\text{k}\Omega$ Load:



For $.47\text{k}\Omega$ Load:

For $3.3\text{k}\Omega$ Load:

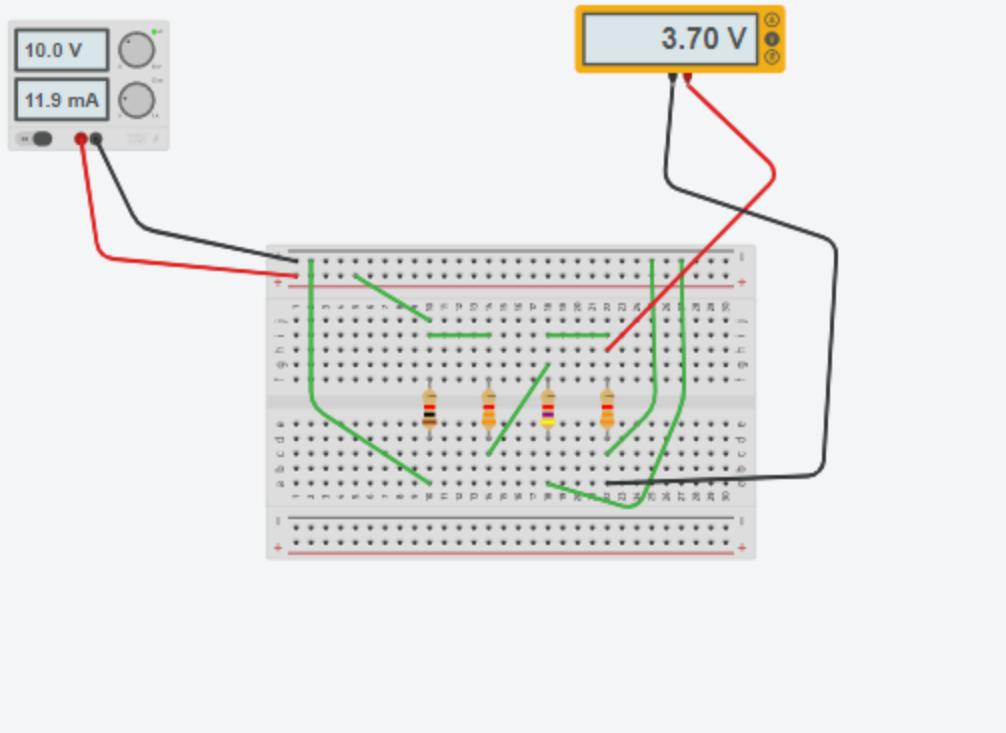


Table1:

Data for Original circuit $R_1=1\text{k}\Omega$, $R_2=3.3\text{k}\Omega$, $R_3=4.7\text{k}\Omega$, $V_s = 10\text{V}$

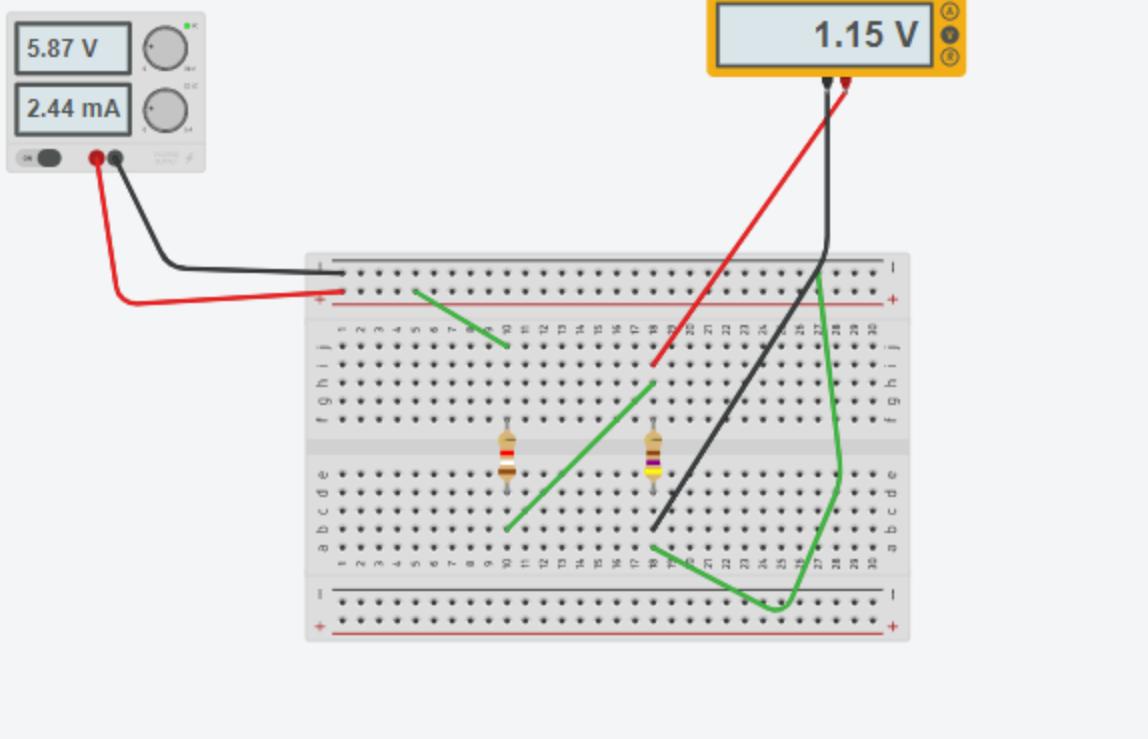
No. of Obs.	Values of R_L	Load Voltage V_L	Load current I_L
1.	$1\text{k}\Omega$	2V	2.00mA
2.	$.47\text{k}\Omega$.47V	2.44mA
3.	$3.3\text{k}\Omega$	3.7V	1.12mA

FINDING V_{TH} & R_{TH} :

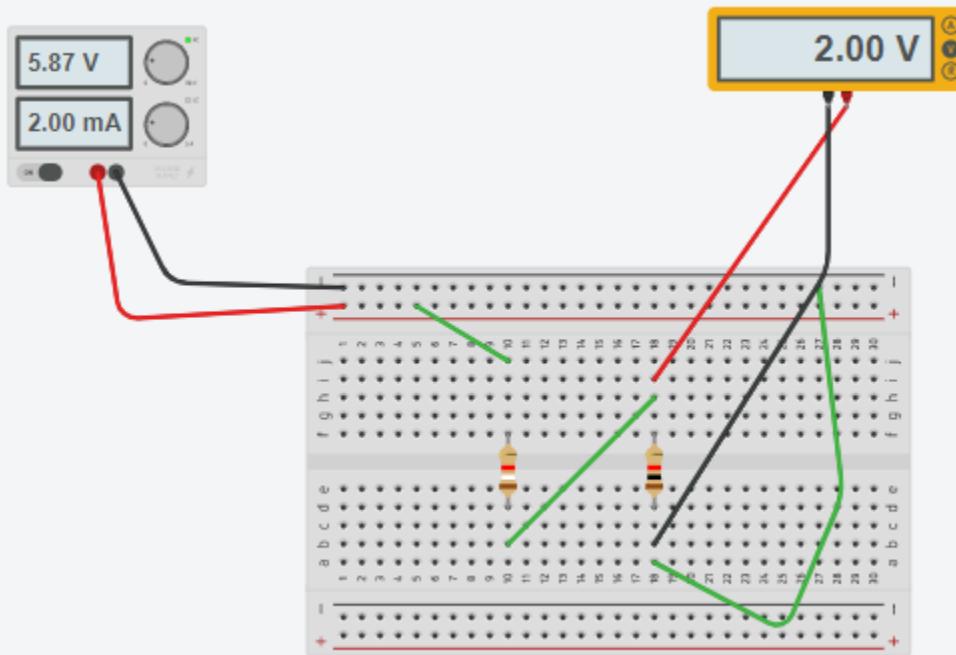
EXPERIMENTAL DATA:

$$V_{TH} = 5.87\text{V}, R_{TH} = 1.9373 \text{ K}\Omega$$

For $1\text{k}\Omega$ Load:



For .47k Ω Load:



For 3.3k Ω Load:

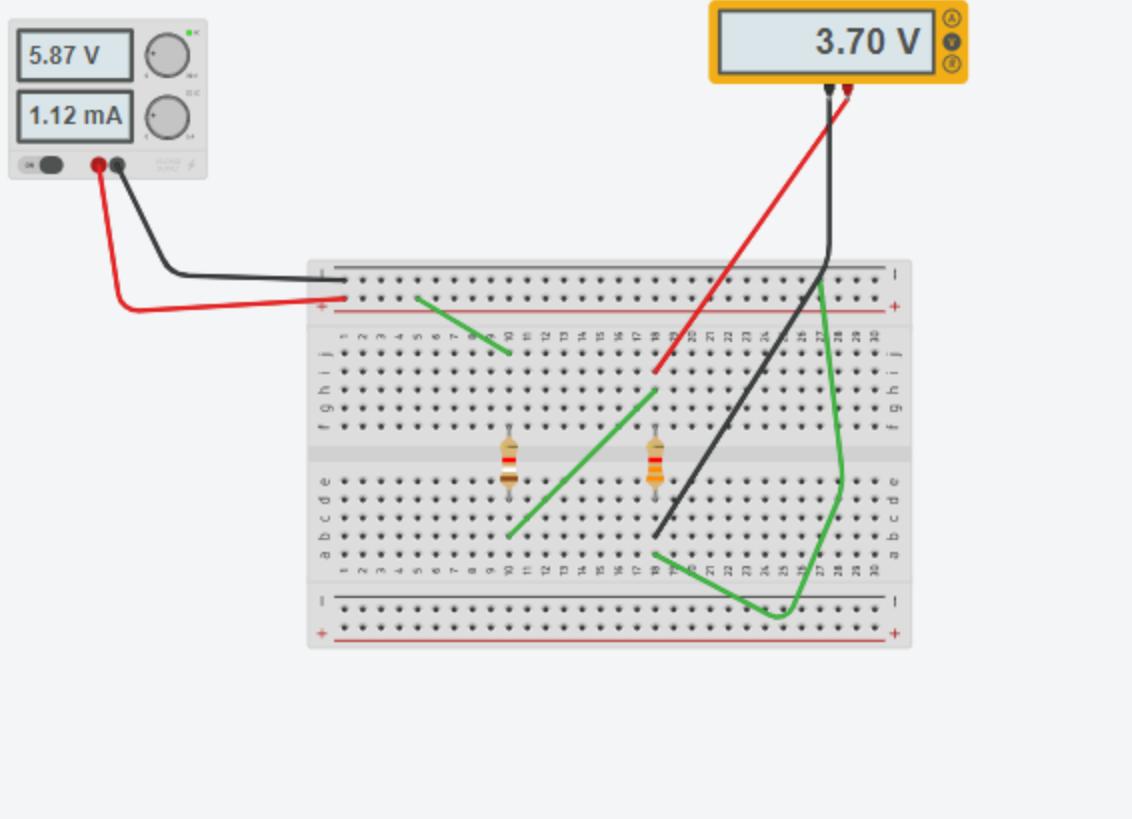


Table 2:

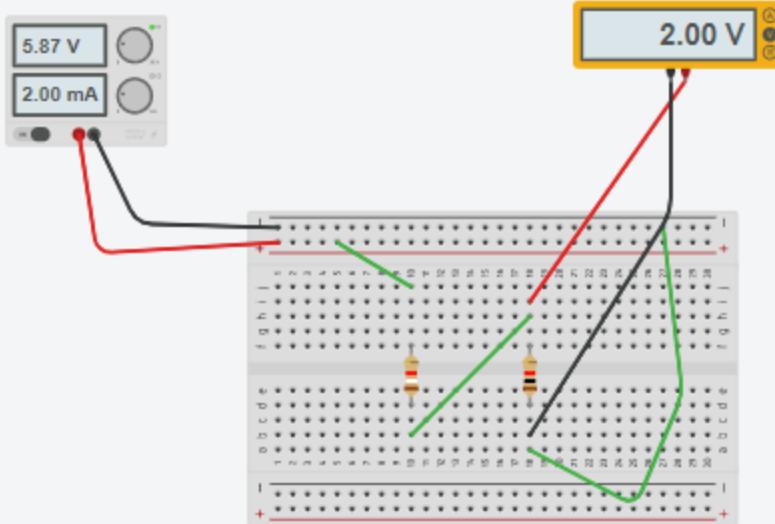
Table2: Data for Thevenin equivalent circuit

No. of Obs	Values of R_L	Load Voltage V_L	Load current I_L
1.	1	2V	2mA
2.	.47	1.15V	2.44mA
3.	3.3	3.70V	1.12mA

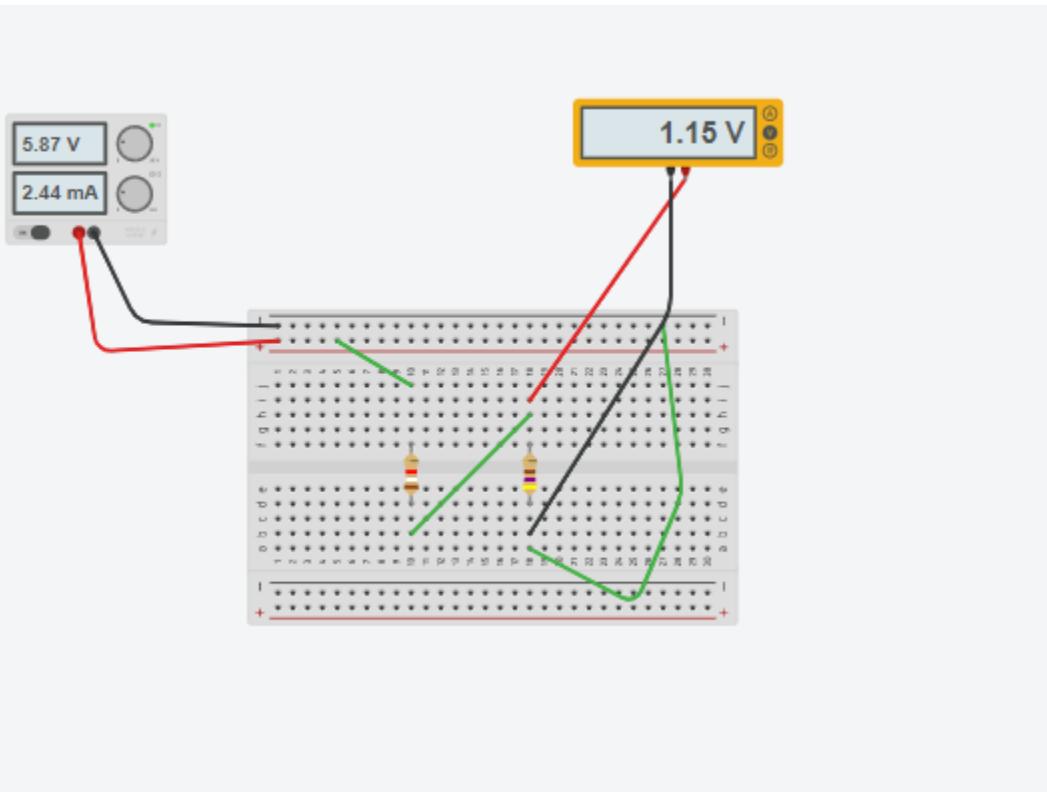
Part 2:

OBJECTIVE: The objective of this experiment is to verify maximum power transfer theorem

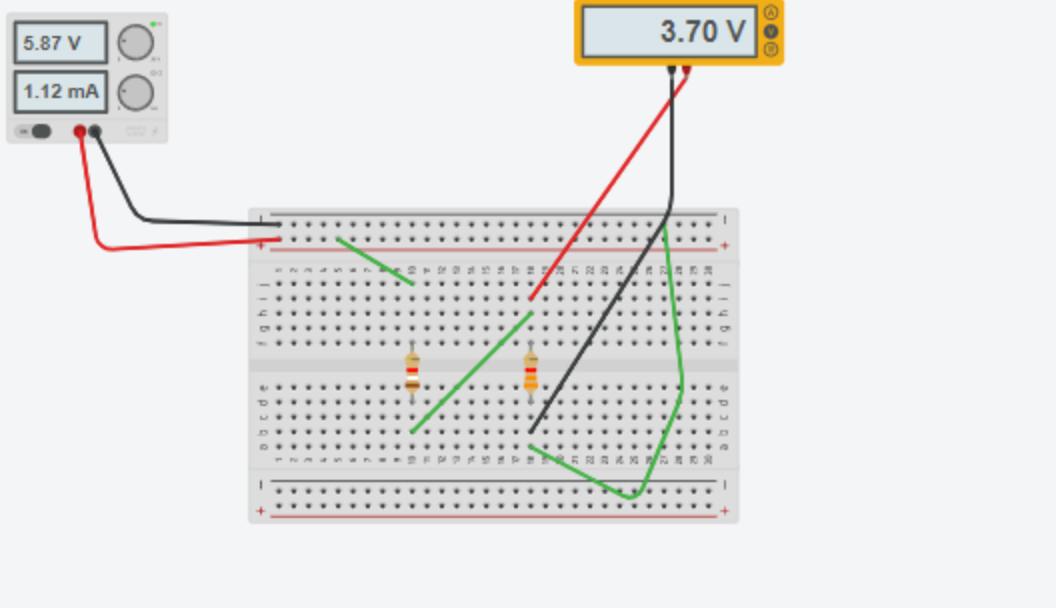
For 1KΩ Load:



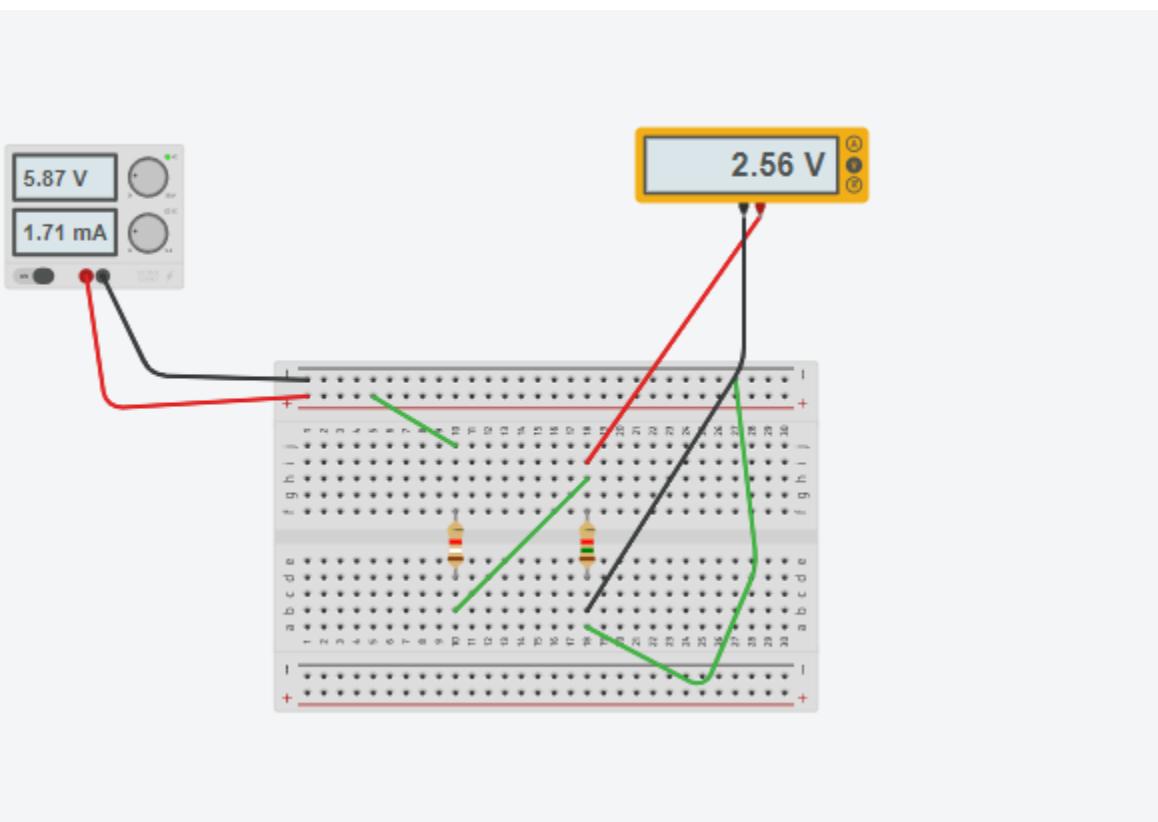
For $.47\text{ k}\Omega$ Load:



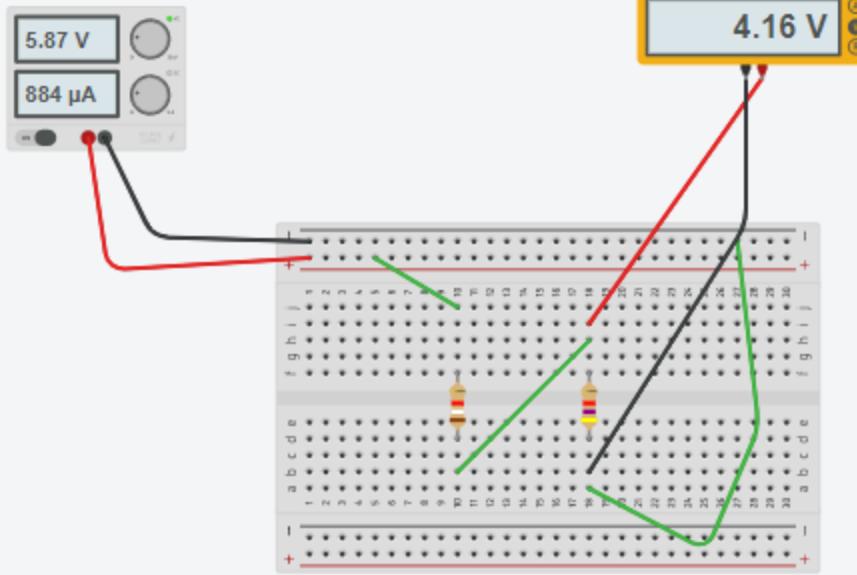
For $3.3\text{ k}\Omega$ Load:



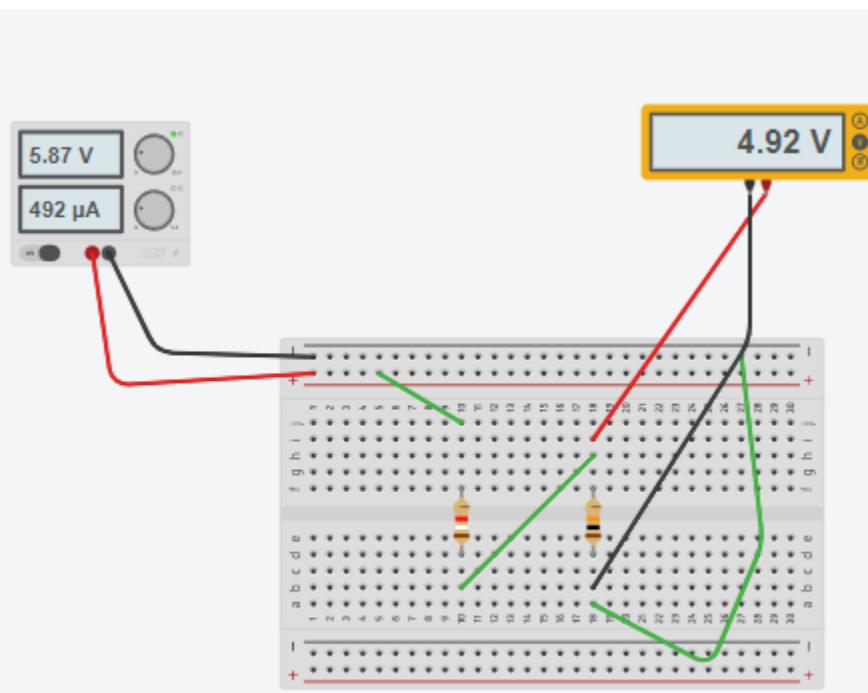
For 1.5KΩ Load:



For 4.7 KΩ Load:



For 10KΩ Load:



EXPERIMENTAL DATA:

No. of Obs .	R _{th} (K)	V _{TH} (V)	R _L =V _L /I	V _L (V)	I (m A)	P _{IN} =V _T H _I (mW)	P _{OUT} = V _L I (mW)	LOSS= P _{IN} -P _{OUT} (mW)	% η	%VR
1.	1.9373	5.87	1KΩ	2.00	2.0 0	11.74	4.00	7.7	34.07 %	193.7 %
2.	1.9373	5.87	470Ω	1.15	2.4 4	14.3	2.806	11.51	19.5%	412.1 %
3.	1.9373	5.87	3.3KΩ	3.70	1.1 2	6.57	4.144	2.43	63.0%	58.7 %
4.	1.9373	5.87	1.5KΩ	2.56	1.7 1	10.03	4.37	5.6	43.61%	129.15 %
5.	1.9373	5.87	4.7KΩ	4.16	0.8 8	5.18	3.67	1.51	70.86 %	41.21 %
6.	1.9373	5.87	10KΩ	4.92	0.4 9	2.8	2.42	0.4	83.8%	19.3 %

GRAPH:

