Lab 1C Assignment

Charles Zhang

Potentiometer

- What resistance do you measure across the left and right pin?
  - 9.09Ω
- What range of resistances do you measure across the left and center pin?
  - 0 - 9.1Ω
- Turn the knob so the resistance is roughly 3 kΩ.
- What is the resistance across the left pin and the center pin?
  - 2.99Ω
- What is the resistance across the right pin and the center pin?
  - 6.32Ω

Voltage vs current using Multimeter ONLY

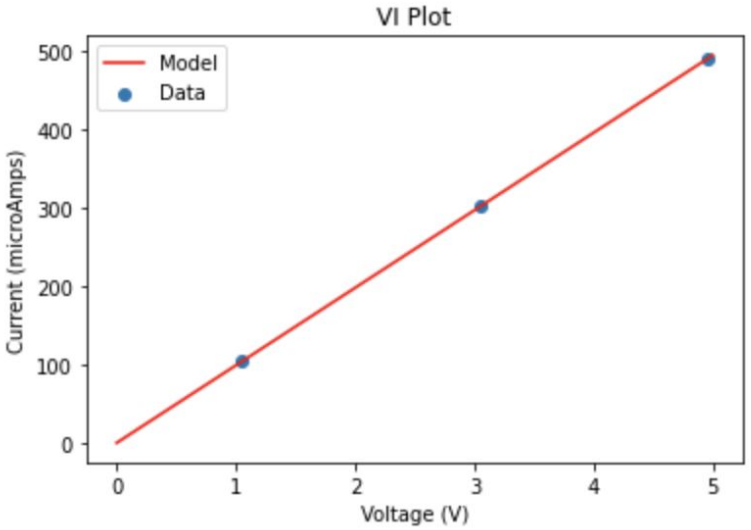
10 kΩ resistor

Intended Voltage (Volts)	Actual Voltage (V)	Current (microAmps)
5 V	4.95V	489 microAmps
3 V	3.05V	302 microAmps
1 V	1.051V	104 microAmps

Voltage vs Current (VI) Plot

Include points and fit, and have axis labeled. What is the fit parameters?

- Slope = 98.74592482125512
- Intercept = 0.4168781476067338



Voltage vs current using Multimeter and Arduino

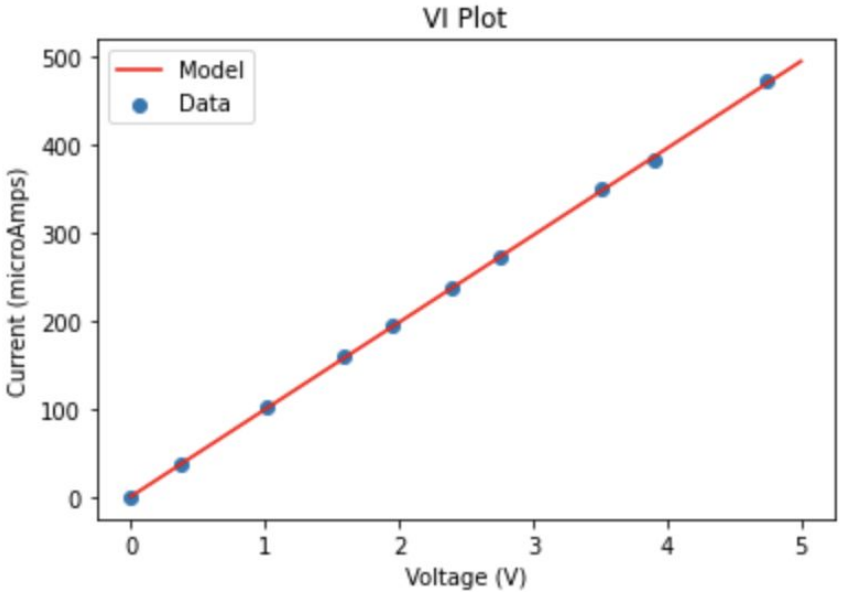
10 kΩ resistor

Voltage (Integer)	Voltage (Volts)	Current (microAmps)
0	0	0
77	0.376	38
208	1.02	102
325	1.59	159
400	1.956	196
488	2.386	238
564	2.758	273
719	3.516	349
799	3.907	383
970	4.743	473

Voltage vs Current (VI) Plot

Include points and fit, and have axis labeled. What are the fit parameters?

- Slope = 98.9733442279883
- Intercept = 0.864514423880431



Voltage vs current using Multimeter and Arduino

1 kΩ

Voltage (Integer)	Voltage (Volts)	Current (microAmps)
0	0	0
43	0.21	202
98	0.48	447
171	0.84	773
216	1.09	1003
254	1.24	1238
411	2.01	1840
564	2.66	2610
741	3.59	3530
991	4.84	4750

Voltage vs current using Multimeter and Arduino

50 kΩ

Voltage (Integer)	Voltage (Volts)	Current (microAmps)
0	0	0
116	0.57	11.6
259	1.27	25.5
388	1.90	38.1
497	2.43	48.8
614	3.00	60.1
763	3.73	74.7
862	4.22	84.4
950	4.64	92.9
1007	4.92	98.6

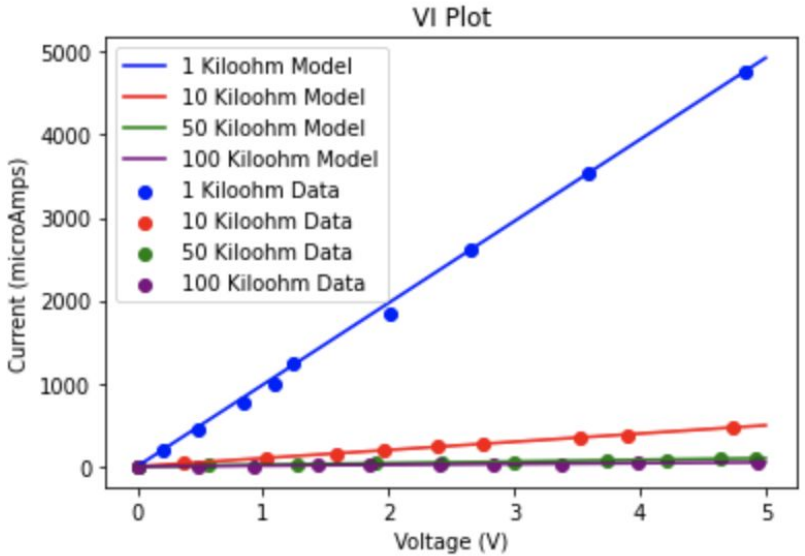
Voltage vs current using Multimeter and Arduino

100 kΩ

Voltage (Integer)	Voltage (Volts)	Current (microAmps)
0	0	0
99	0.48	4.9
190	0.93	9.3
294	1.44	14.4
377	1.84	18.4
493	2.41	24.1
578	2.83	28.2
690	3.37	33.6
816	3.99	39.8
1008	4.93	49.1

Voltage vs Current (VI) Plot

Include points and fit for the datasets for 1 kΩ, 10 kΩ, 50 kΩ, and 100 kΩ on one figure, with a legend, and have the axis labeled.



Fit Parameters

For each dataset what are the fit parameters?

Resistance	Fitted Resistance
1 kΩ	1.015kΩ
10 kΩ	10.104kΩ
50 kΩ	49.990kΩ
100 kΩ	100.475kΩ