

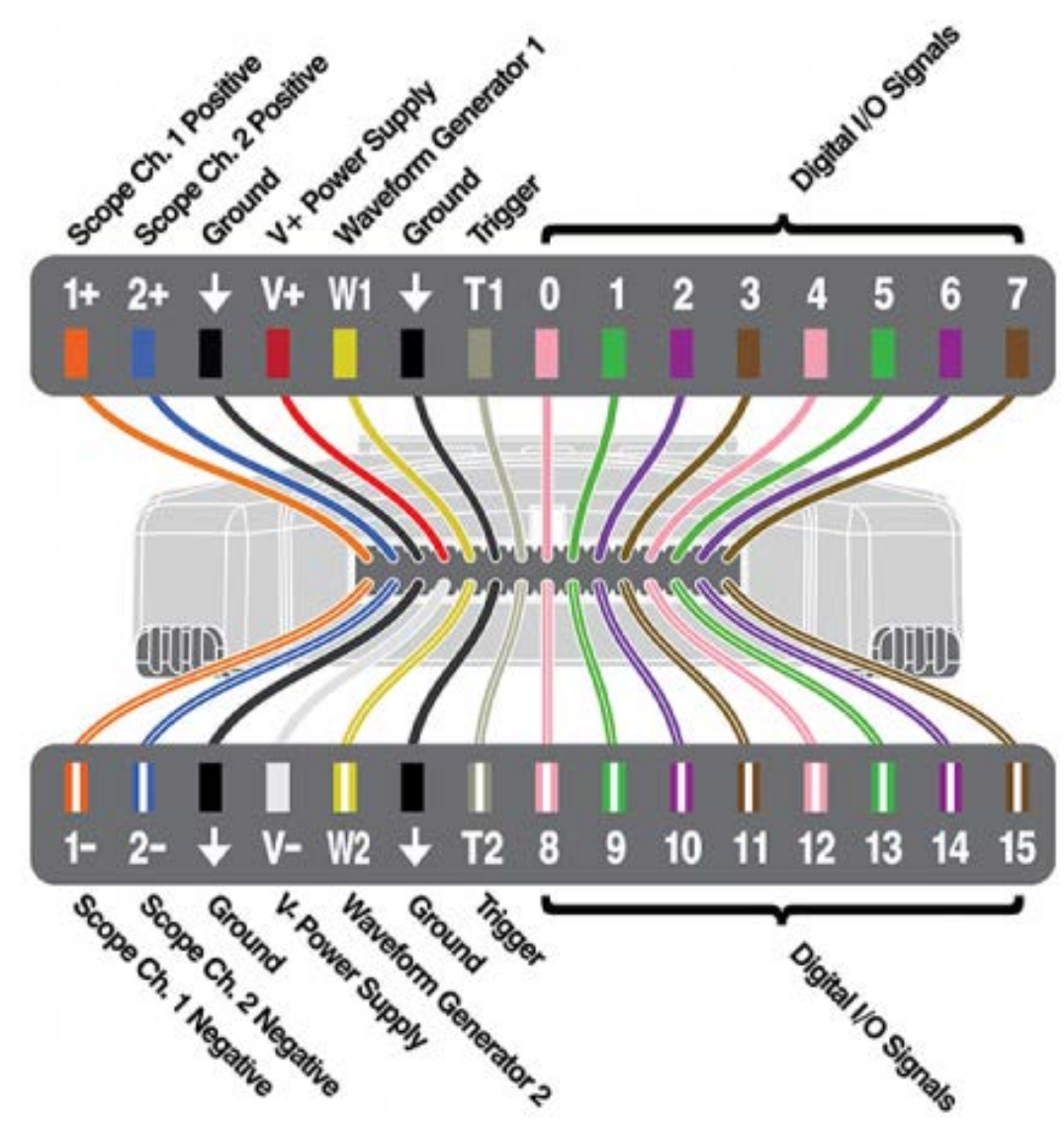
Determine the i-v relationship of an unknown device.

Variable Voltage Source, V_{IN}
Sweep Value from -5V to 5V

Measure Device Voltage, V_{DUT}

Known Resistance, 100Ω
(to determine current)

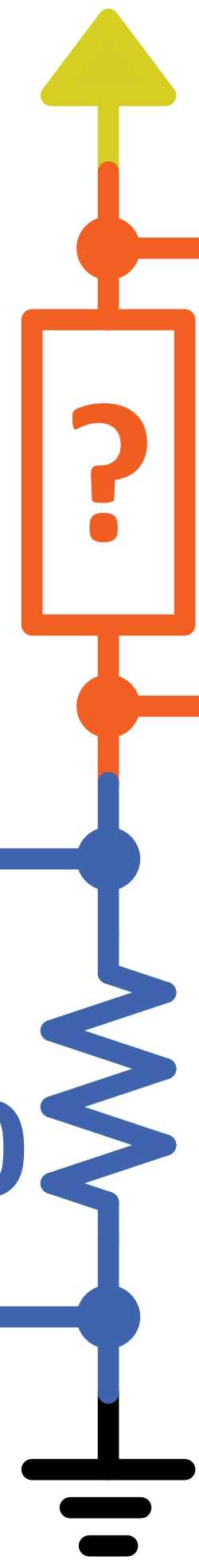
Plot the i-v curve. Determine the DUT value. How does it compare to the actual value?



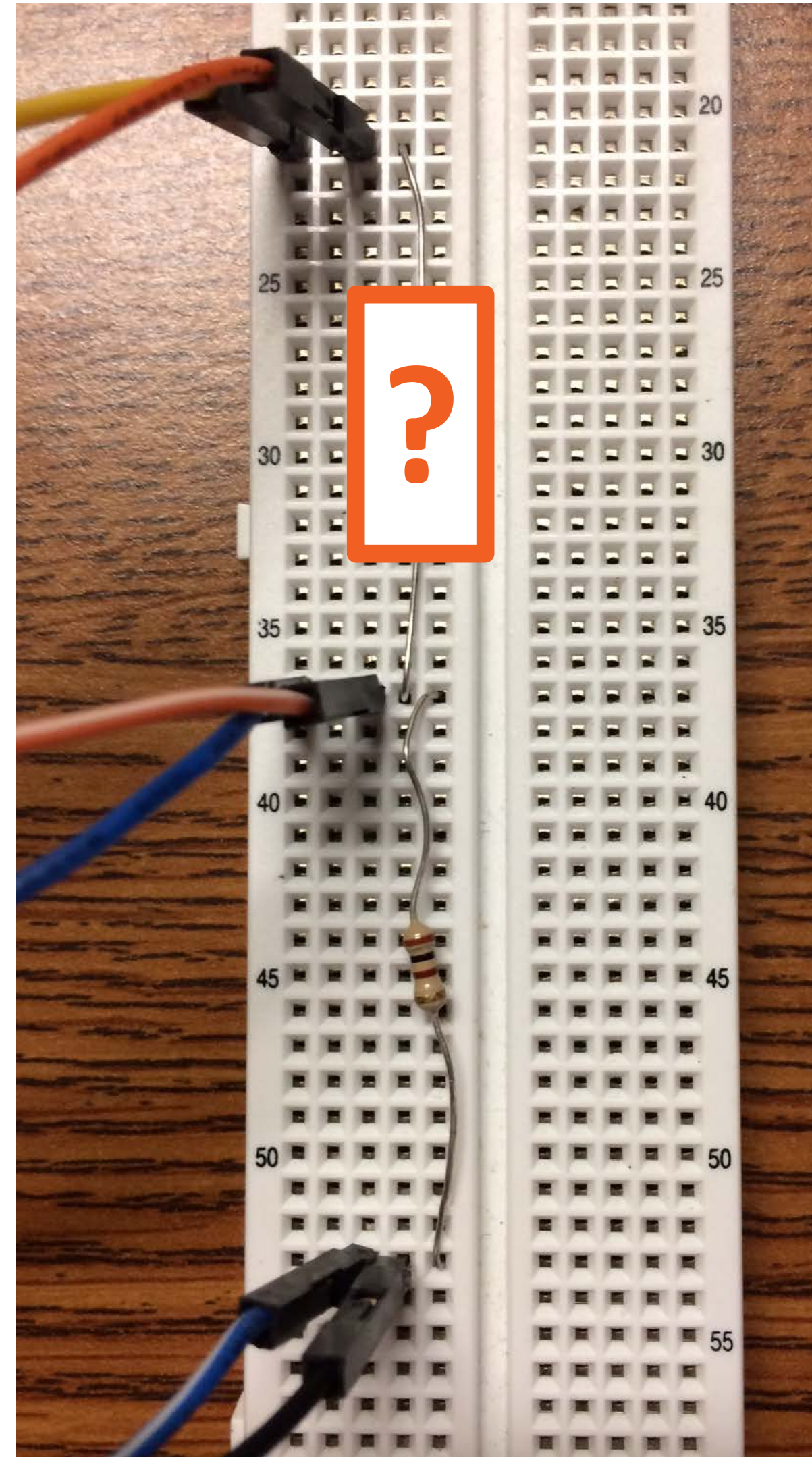
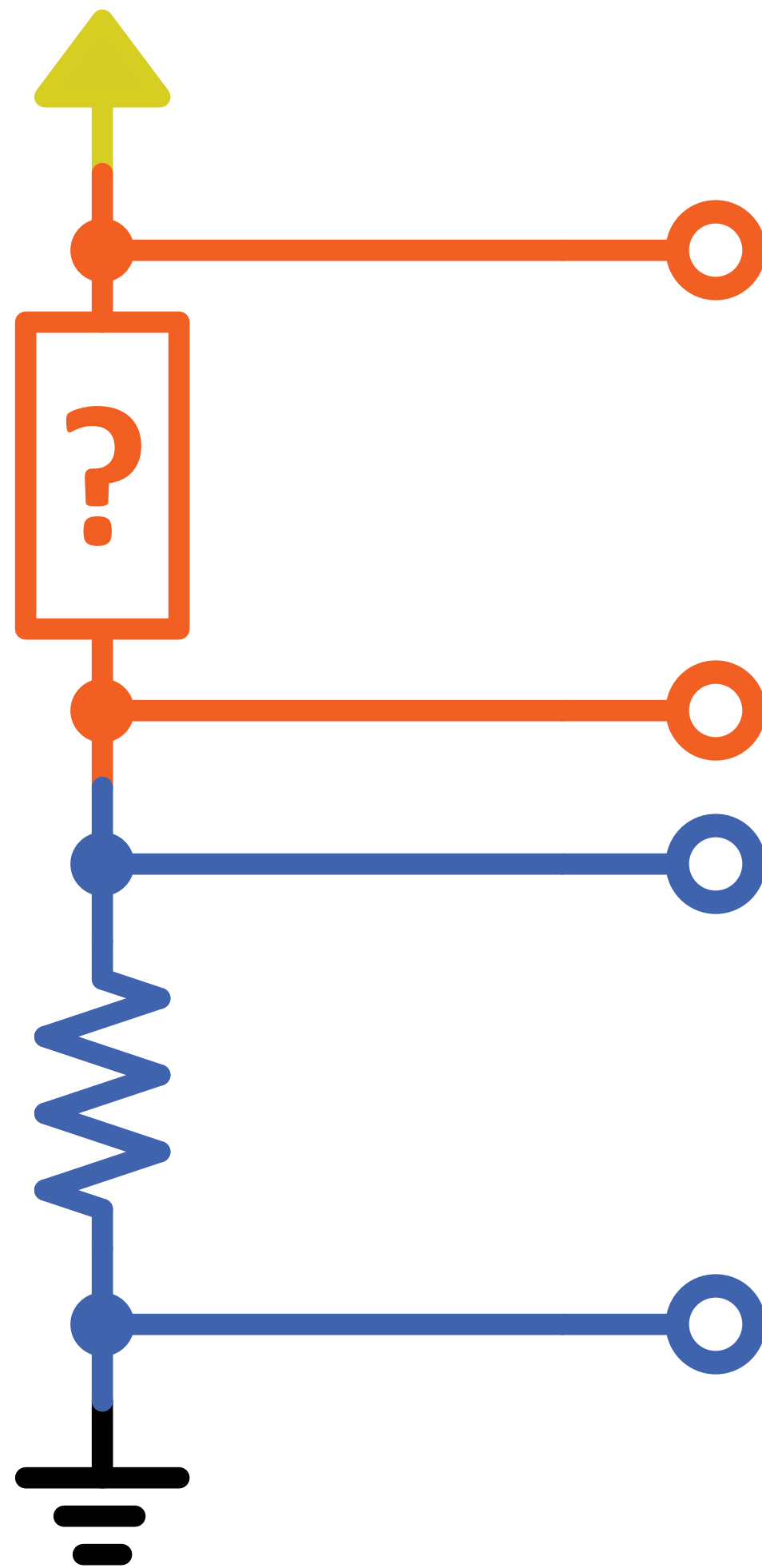
DUT, Value Unknown

Measure V_R
 $I_{DUT} = I_R = V_R / 100$

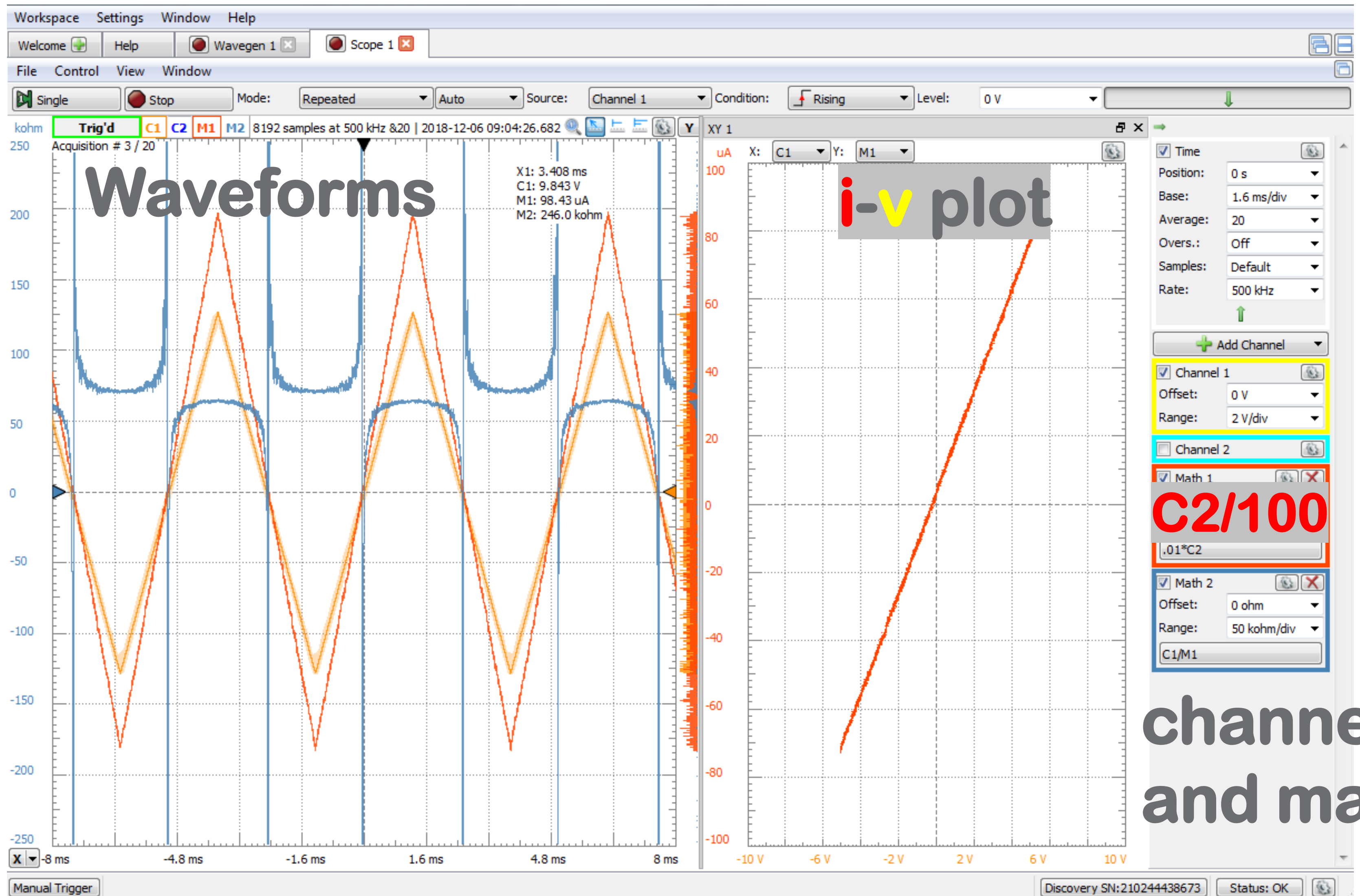
Save Results to an Excel File.



Example: Set up



Example: $i_R(v_R)=?$



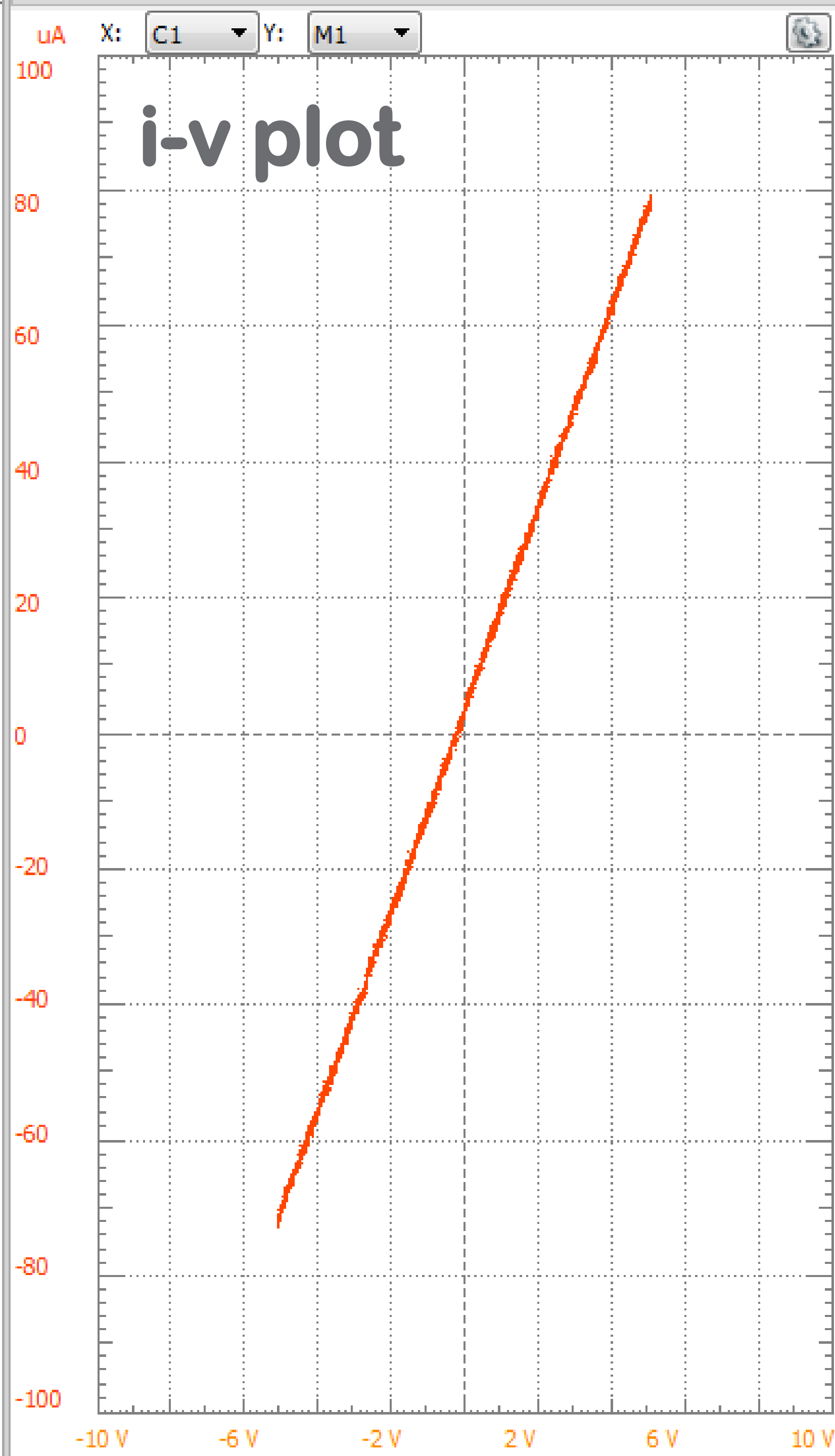
channels
and math

What is this?

Example: $i_R(v_R)=?$

What is this?

~A straight line through the 0,0.



Time: Time
Position: 0 s
Base: 1.6 ms/div
Average: 20
Overs.: Off
Samples: Default
Rate: 500 kHz

+ Add Channel

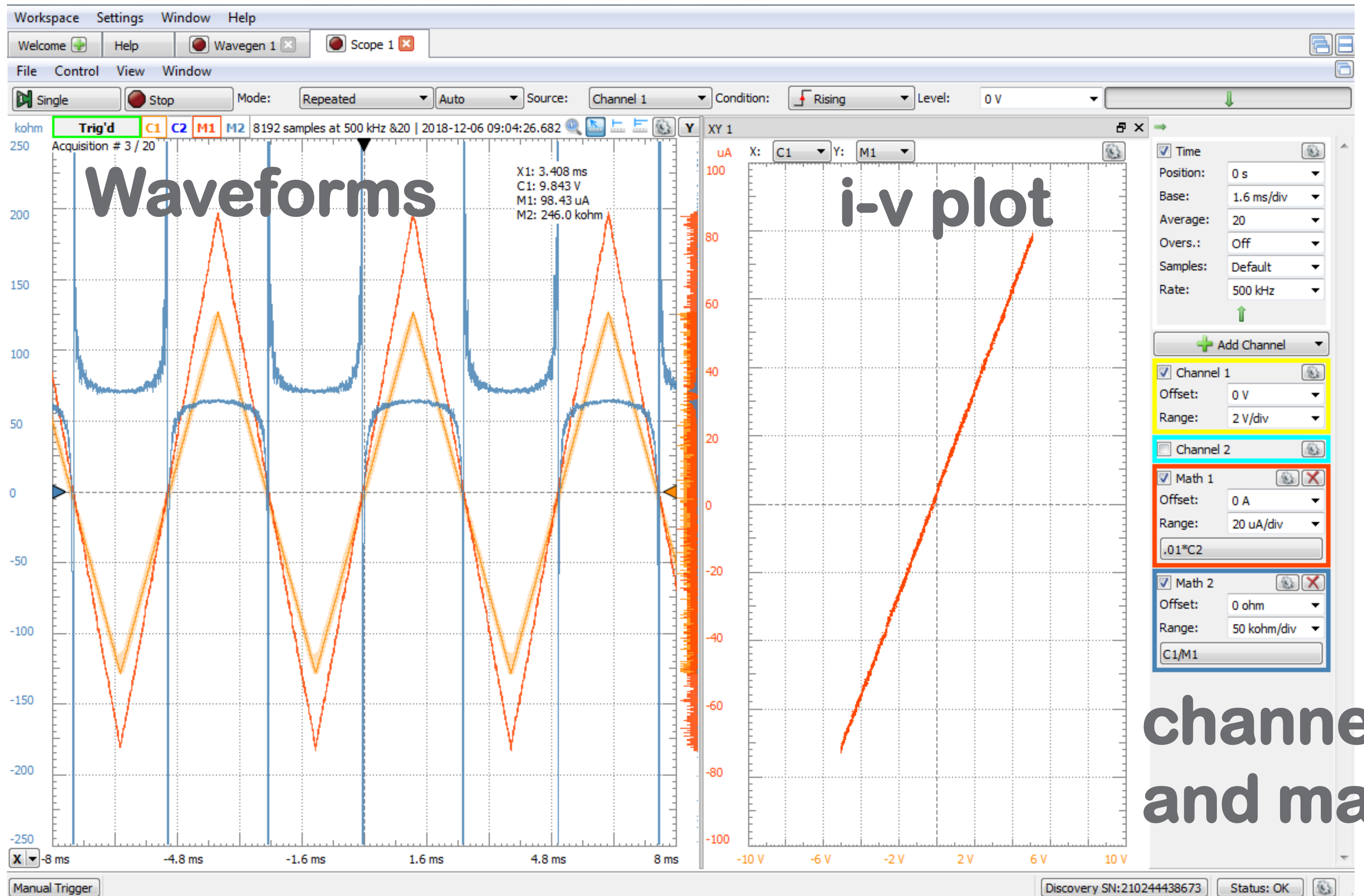
Channel 1
Offset: 0 V
Range: 2 V/div

Channel 2

Math 1
Offset: 0 A
Range: 20 $\mu\text{A}/\text{div}$
.01*C2

Math 2
Offset: 0 ohm
Range: 50 kohm/div
C1/M1

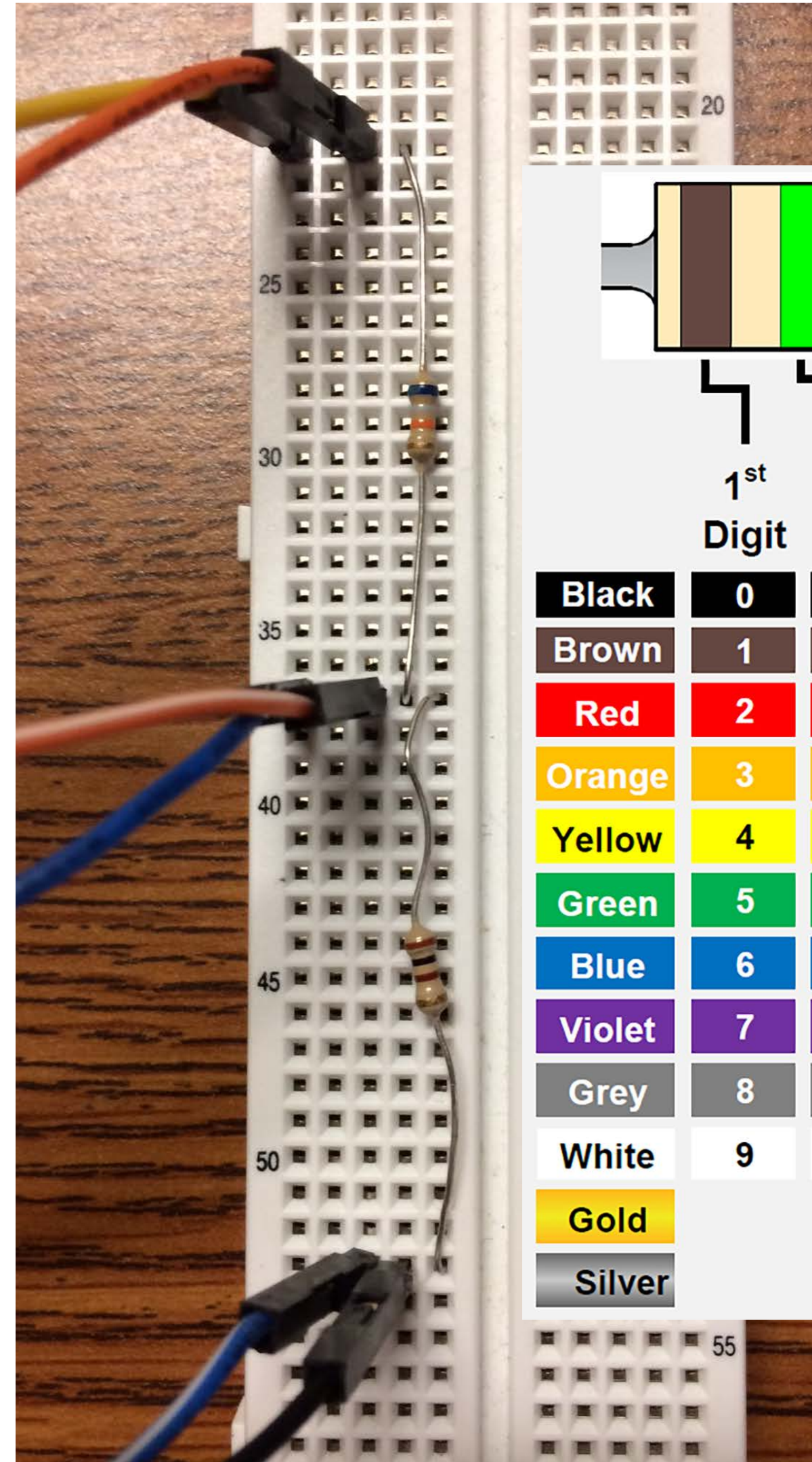
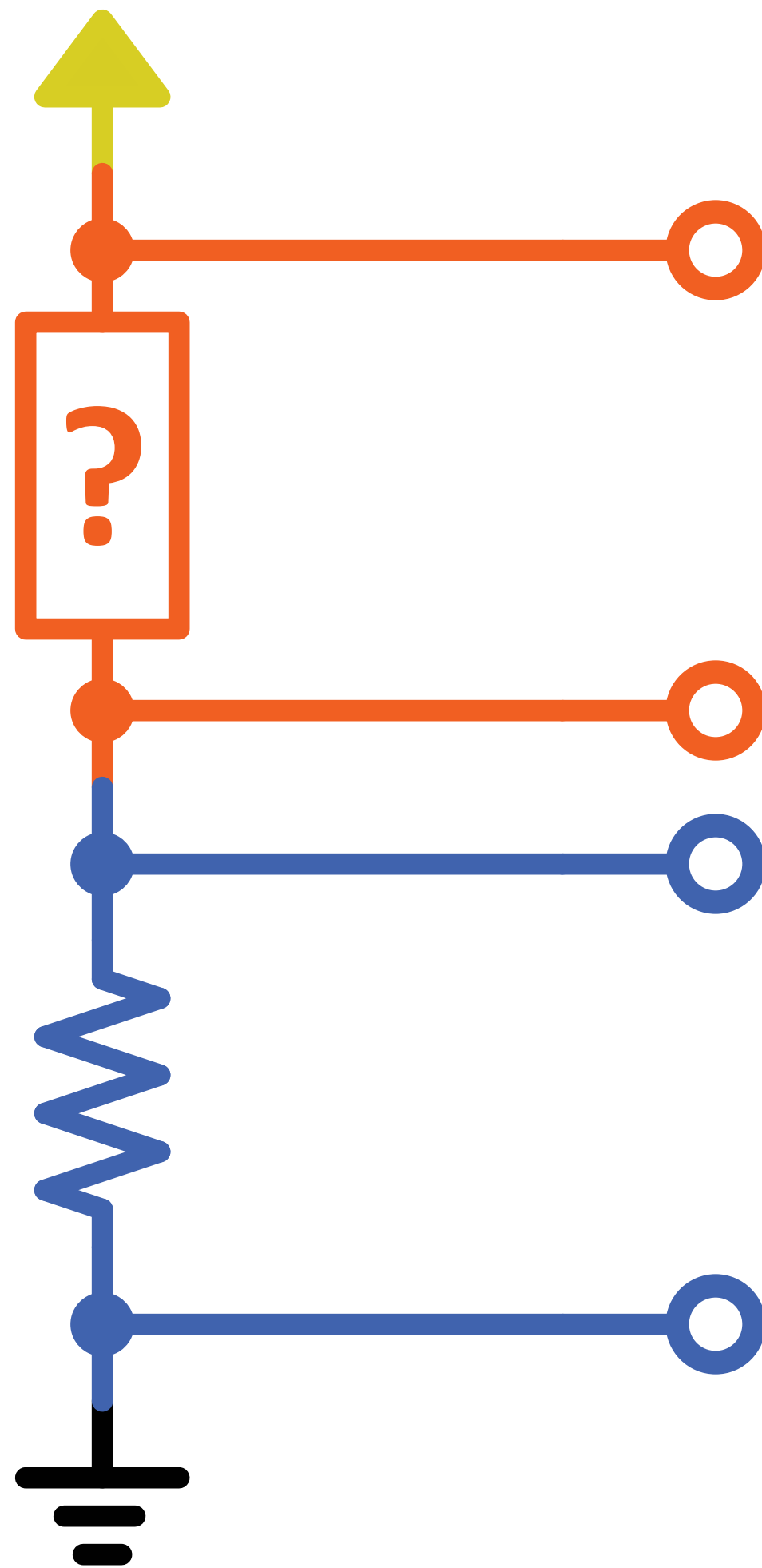
Resistor Example: $i_R = v_R/R$



$$R = v_R / i_R = 1 / (\text{i-v slope}) = 100 * (\Delta C1) / (\Delta C2)$$

$$\text{Resistance} = 10V / .00015A = 67 \text{ k}\Omega$$

Resistor Example: Set up



	1 st Digit	2 nd Digit	Multiplier	Tolerance
Black	0	0	x 1	
Brown	1	1	x10	±1%
Red	2	2	x10 ²	±2%
Orange	3	3	x10 ³	±3%
Yellow	4	4	x10 ⁴	±4%
Green	5	5	x10 ⁵	±0.5%
Blue	6	6	x10 ⁶	±0.25%
Violet	7	7	x10 ⁷	±0.1%
Grey	8	8	x10 ⁸	±0.05%
White	9	9	x10 ⁹	
Gold			x10 ⁻¹	±5%
Silver			x10 ⁻²	±10%

Resistance = 68 kΩ