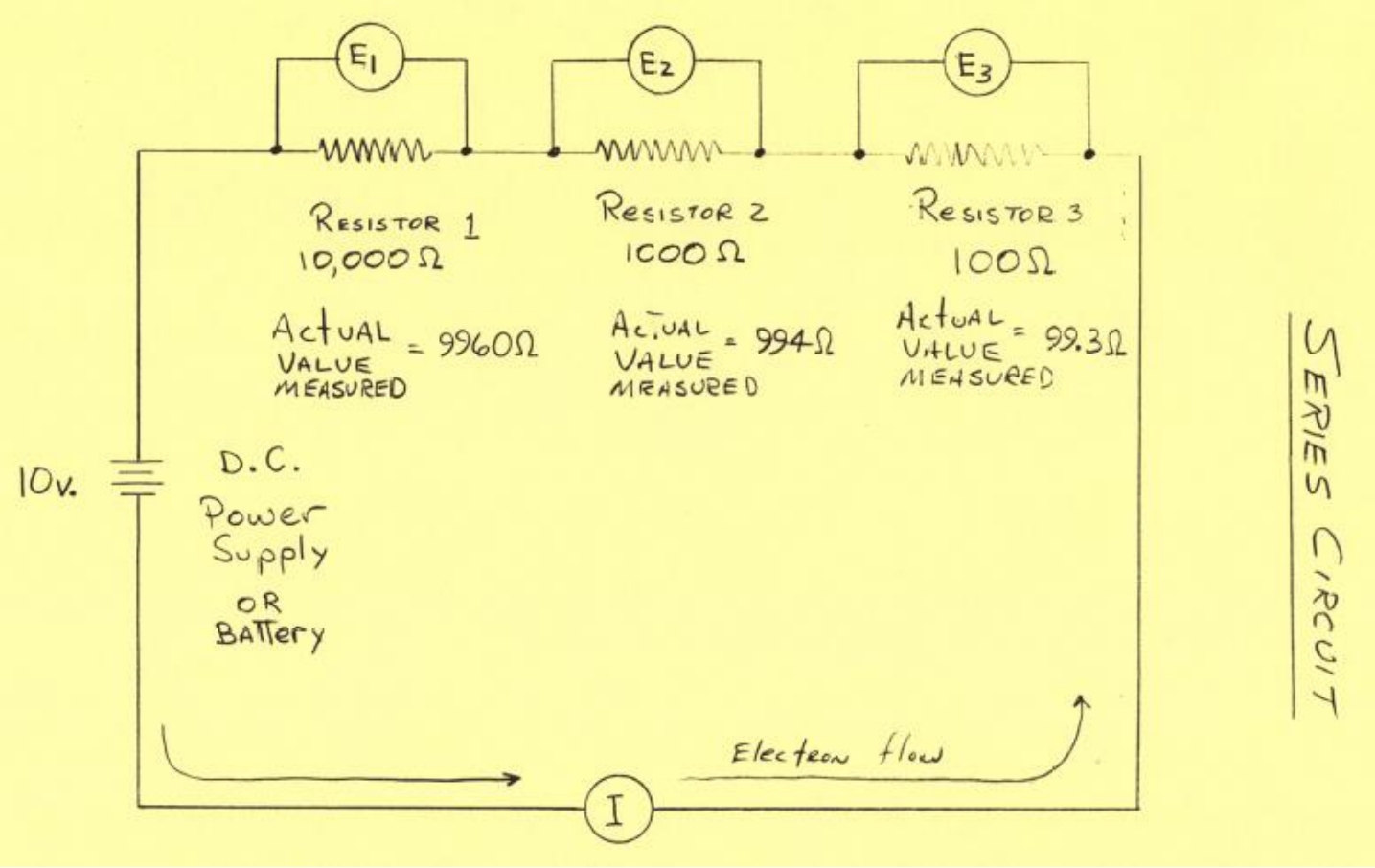
Basic Electricity – Unit 6: Other Basic Circuit Fundamentals

Lab 1

Instructions: Solve the following series circuit and verify the results in the lab.



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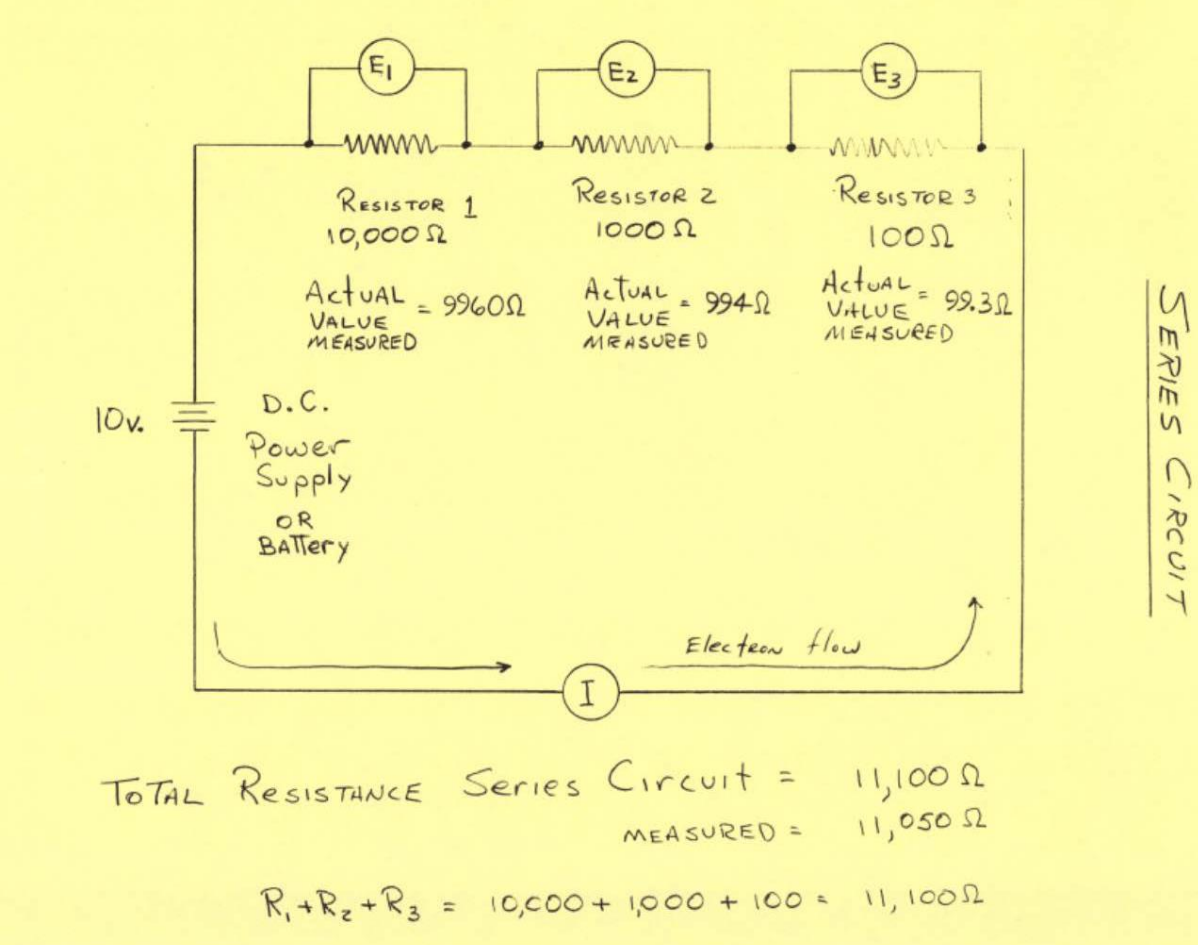
Solution:



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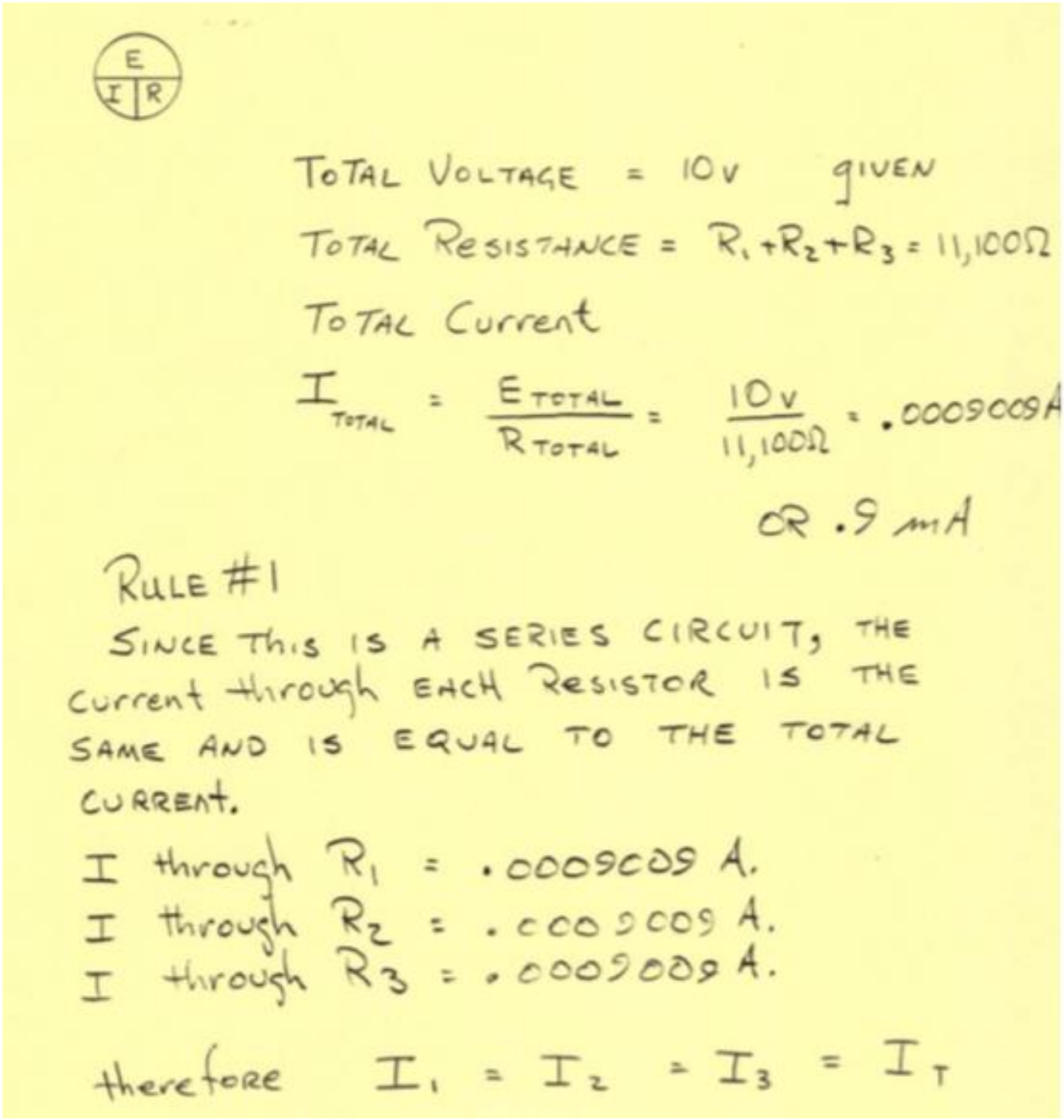

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SINCE VOLTAGE (E) IS EQUAL TO CURRENT TIMES RESISTANCE:

VOLTAGE ACROSS R_1 = $(I_1) \times (R_1) = E_1$
VOLTAGE ACROSS R_2 = $(I_2) \times (R_2) = E_2$
VOLTAGE ACROSS R_3 = $(I_3) \times (R_3) = E_3$

then this means

$E_1 = (.0009009\ A) \times (10000\Omega) = 9.009\ V.$
$E_2 = (.0009009\ A) \times (1000\Omega) = .9009\ V.$
$E_3 = (.0009009\ A) \times (100\Omega) = .09009\ V.$

NOTE: VALUES ROUNDED OFF

WHEN ACTUAL MEASUREMENTS WERE TAKEN:

E_1 MEASURED 9.01 V
E_2 MEASURED .900
E_3 MEASURED .0899

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RULE #2

The VOLTAGES AROUND A series CIRCUIT ADD up TO EQUAL THE TOTAL Supply VOLTAGE.

therefore:

USING THE CALCULATED VALUES FOR E_1, E_2, E_3

$E_1 = 9.009\ V.$
$E_2 = .9009\ V.$
$E_3 = .09009\ V.$
$9.99999\ V.$

USING MEASURED VALUES.

$E_1 = 9.01\ V$
$E_2 = .900\ V$
$E_3 = +.0899\ V$
$9.9989\ V.$

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