The Metric Bridge

*Laws of the Metric Bridge Experiment:

* Calculating the Unknown Resistance Rx :

$$Rx = R \times L1/L2$$

Rx→is the unknown resistance.

R→ is the known standard resistance.

L1→ is the length of the wire from the starting point to the balance point.

L2→ is the remaining length of the wire, where

$$L2 = 100 - L1$$

NOTE↓

* Balance Condition in the Metric Bridge:

→At the balance point, the voltage difference across the galvanometer is zero, so:

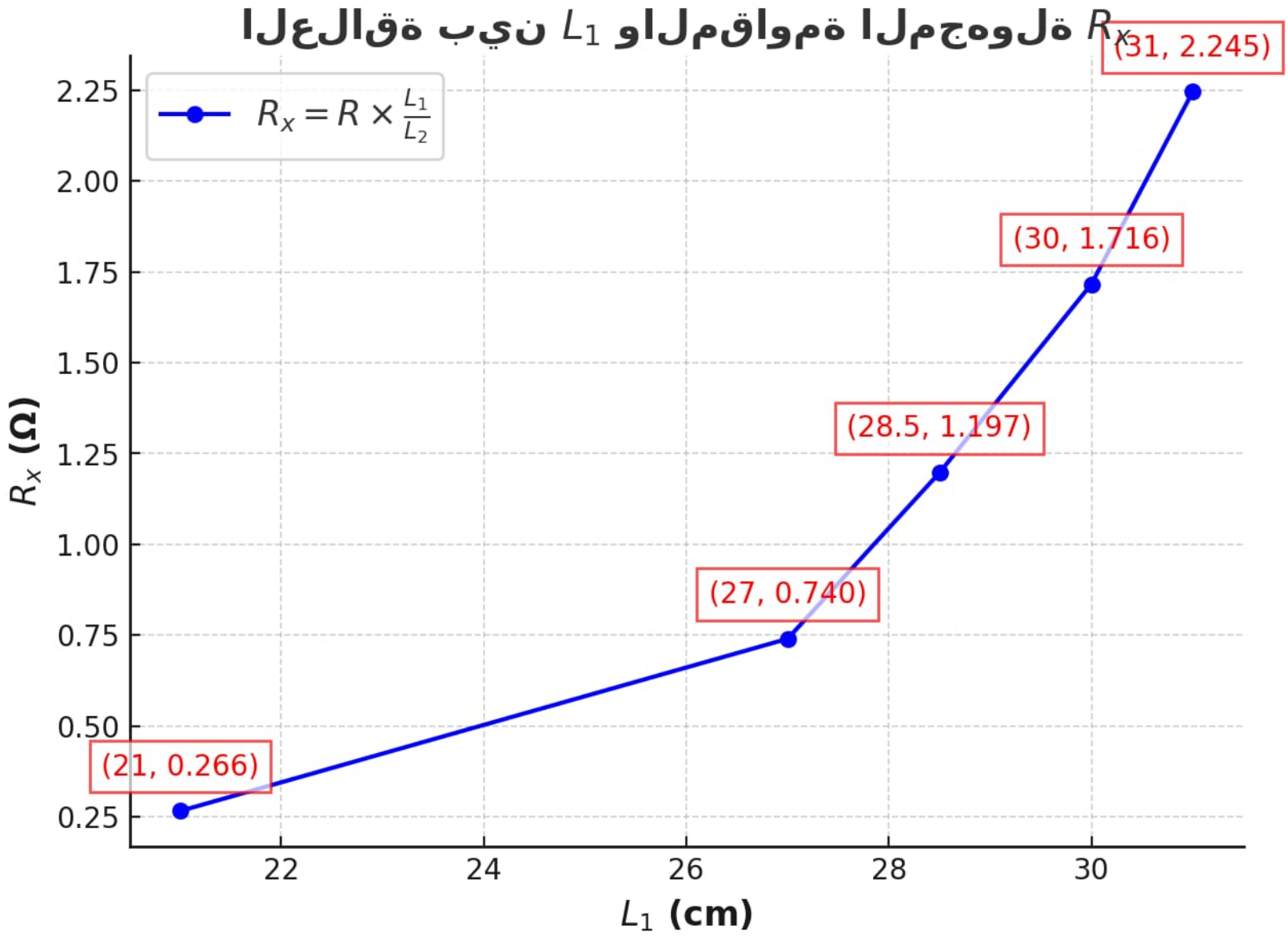
$$Rx \times L2 = R \times L1$$

Very important↓

Objective of the Experiment:

1. To determine the unknown resistance
2. Determination of the specific resistance
3. Study the series and parallel connection

R (Ω)	1	2	3	4	5
L1 (cm)	21.0	27.0	28.5	30.0	31.0
L2 = (100 - L1) (cm)	79.0	73.0	71.5	70.0	69.0
L1/L2	0.266	0.37	0.399	0.429	0.449
Rx = (R × L1/L2) (Ω)	0.266	0.74	1.197	1.716	2.245


العلاقة بين L_1 والمقاومة المجهولة R_x
$R_x = R \times \frac{L_1}{L_2}$
(21, 0.266)
(27, 0.740)
(28.5, 1.197)
(30, 1.716)
(31, 2.245)
R_x (Ω)
L_1 (cm)
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2.25
22
24
26
28
30