VIRTUAL LAB EXPERIMENT-1

AIM:-*To verify the voltage divider rule (VDR) and the current divider rule (CDR).*

RESULT:-

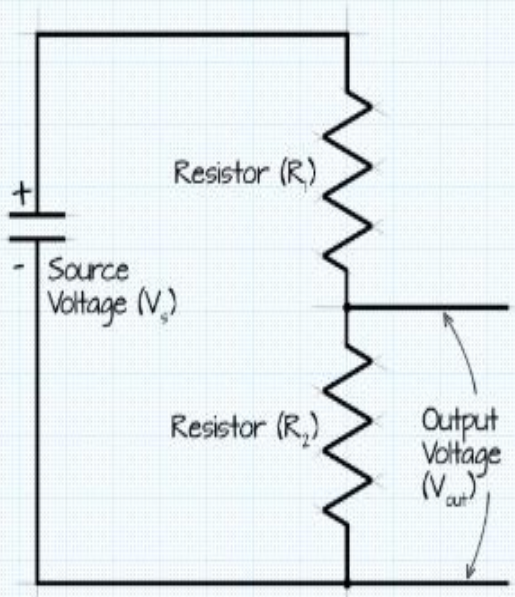
VERIFICATION OF VOLTAGE DIVIDER RULE:

1.

Voltage Divider Calculator

A voltage divider circuit is a very common circuit that takes a higher voltage and converts it to a lower one by using a pair of resistors. The formula for calculating the output voltage is based on Ohms Law and is shown below.

$$V_{out} = \frac{V_s \times R_2}{(R_1 + R_2)}$$



where:

- V_S is the source voltage, measured in volts (V),
- R_1 is the resistance of the 1st resistor, measured in Ohms (Ω).
- R_2 is the resistance of the 2nd resistor, measured in Ohms (Ω).
- V_{out} is the output voltage, measured in volts (V),

Enter any three known values and press 'Calculate' to solve for the other.

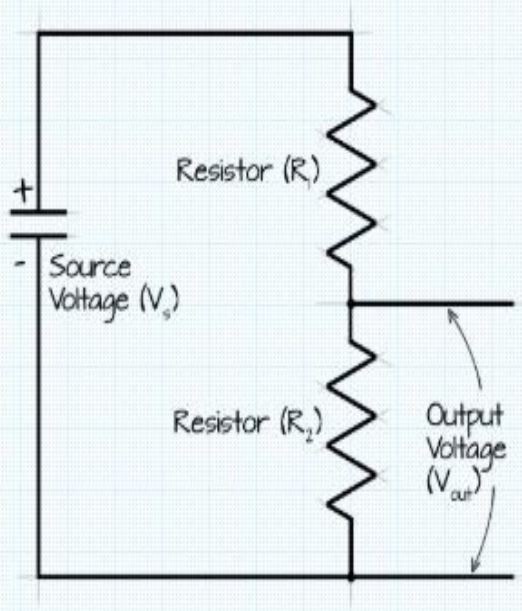
Voltage Source (V_S)	5	Volts (V)
Resistance 1 (R_1)	10	kilohms (kΩ)
Resistance 2 (R_2)	10	kilohms (kΩ)
Output Voltage (V_{OUT})	2.5	Volts (V)

2.

Voltage Divider Calculator

A voltage divider circuit is a very common circuit that takes a higher voltage and converts it to a lower one by using a pair of resistors. The formula for calculating the output voltage is based on Ohms Law and is shown below.

$$V_{out} = \frac{V_s \times R_2}{(R_1 + R_2)}$$



where:

- V_S is the source voltage, measured in volts (V).
- R_1 is the resistance of the 1st resistor, measured in Ohms (Ω).
- R_2 is the resistance of the 2nd resistor, measured in Ohms (Ω).
- V_{out} is the output voltage, measured in volts (V).

Enter any three known values and press "Calculate" to solve for the other.

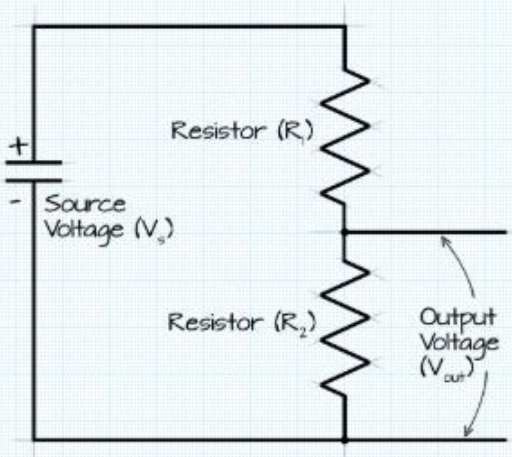
Voltage Source (V_S)	5	Volts (V)
Resistance 1 (R_1)	20	kilohms (kΩ)
Resistance 2 (R_2)	10	kilohms (kΩ)
Output Voltage (V_{OUT})	1.667	Volts (V)

3.

Voltage Divider Calculator

A voltage divider circuit is a very common circuit that takes a higher voltage and converts it to a lower one by using a pair of resistors. The formula for calculating the output voltage is based on Ohms Law and is shown below.

$$V_{out} = \frac{V_s \times R_2}{(R_1 + R_2)}$$



where:

- V_S is the source voltage, measured in volts (V).
- R_1 is the resistance of the 1st resistor, measured in Ohms (Ω).
- R_2 is the resistance of the 2nd resistor, measured in Ohms (Ω).
- V_{out} is the output voltage, measured in volts (V).

Enter any three known values and press "Calculate" to solve for the other.

Voltage Source (V_S)	5	Volts (V)
Resistance 1 (R_1)	5	kilohms (kΩ)
Resistance 2 (R_2)	30	kilohms (kΩ)
Output Voltage (V_{OUT})	4.286	Volts (V)

VERIFICATION OF CURRENT DIVIDER RULE:

1.

Current Divider Calculator

This tool calculates the current flow through each of up to 10 parallel-connected resistances connected to a current source.

Current Source: 10 A

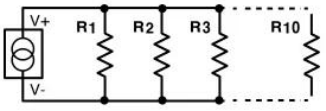
R1	33 kΩ	= 2.32558 A
R2	10 kΩ	= 7.67442 A

Add Resistor | Remove Resistor

FORMULA

$$I_n = I_s \frac{R_{total}}{R_n}$$

R_{total} = The total equivalent parallel resistance of the resistor array across the current source.



2.

Current Divider Calculator

This tool calculates the current flow through each of up to 10 parallel-connected resistances connected to a current source.

Current Source

10 A

R1

33 kΩ = 1.68067 A

R2

10 kΩ = 5.54622 A

R3

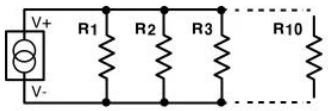
20 kΩ = 2.77311 A

Add Resistor | Remove Resistor

FORMULA

$$I_n = I_s \frac{R_{total}}{R_n}$$

R_{total} = The total equivalent parallel resistance of the resistor array across the current source.



3.

Current Divider Calculator

This tool calculates the current flow through each of up to 10 parallel-connected resistances connected to a current source.

Current Source

10 A

R1

4.7 kΩ = 5.15464 A

R2

5 kΩ = 4.84536 A

Add Resistor | Remove Resistor

FORMULA

$$I_n = I_s \frac{R_{total}}{R_n}$$

R_{total} = The total equivalent parallel resistance of the resistor array across the current source.