

Series Circuit

Name:

Date:

Answer the questions in the blank space!

1. Three resistors of $4\ \Omega$, $6\ \Omega$, and $10\ \Omega$ are connected in series, with a total supplied voltage of 50V .

(a) Calculate the total resistance of the circuit.

(b) Determine the current flowing through the circuit.

(c) Calculate the voltage drop across each resistor.

2. A series circuit consists of two known resistors, $5\ \Omega$ and $12\ \Omega$, and one unknown resistor R_x . The total resistance of the circuit is $30\ \Omega$.

(a) Find the value of the unknown resistor R_x .

(b) If the total voltage supplied is 60V , calculate the current flowing through the circuit.

(c) Calculate the voltage drop across each resistor, including the unknown resistor.

3. A series circuit consists of three resistors with values of $10\ \Omega$, $15\ \Omega$, and $25\ \Omega$, and the total voltage applied is 100V .

(a) Calculate the total resistance and the current in the circuit.

(b) If the $25\ \Omega$ resistor is replaced with a $50\ \Omega$ resistor, recalculate the total resistance and current.

(c) Compare the effects of increasing the resistance on the current and voltage drops across each resistor.