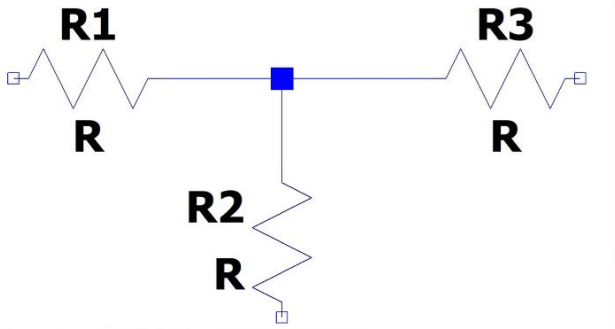


Q1) Resistors in Series and Parallel



The diagram shows a circuit with three resistors labeled R1, R2, and R3. R1 and R3 are connected in series. A junction point is marked with a blue square between R1 and R3. Resistor R2 is connected to this junction point and to the common ground line at the bottom of the circuit.

These three resistors are in

- neither ✓ 71%
- parallel 17%
- series 12%

The answer here is **neither** because:

- 1) In order for resistors to be in series, they must *be connected to each other at one of their ends, with no other elements connected there*. Since *three* elements are connected at a single node, these resistors are **NOT** in series.
- 2) In order for resistors to be in parallel, they must *be connected at both ends, so that they form a loop consisting of only two elements*. Since none of these resistors are connected to any of the other resistors at both ends, these resistors are **NOT** in parallel either.

Q2) Function of a Voltage Divider

A voltage divider always

produces an output voltage that is smaller than the input voltage ✓

91%

consists of resistors connected in parallel

7%

produces an output frequency that is smaller than the input frequency

2%

According to Kirchoff's Voltage law, the total voltage drop across all elements in a circuit loop is zero, stated alternatively, that means that none of the elements that have a voltage drop across them can have a voltage larger than the source voltage.

Accordingly, the voltage dropped across a resistor that is part of a series of resistors cannot exceed the source voltage and the voltage is given by a ratio of that resistor's resistance to the total series resistance of the circuit, where R_L and R_1 are in series:

$$V_{RL} = \frac{R_L}{R_L + R_1} V_{in}$$