VOLTAGE AND CURRENT DIVIDER THEOREM

BASIC CIRCUIT ANALYSIS METHOD

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TOPIC OUTLINE

Voltage Divider Theorem (VDT)

Current Divider Theorem (IDT)

VOLTAGE DIVIDER THEOREM

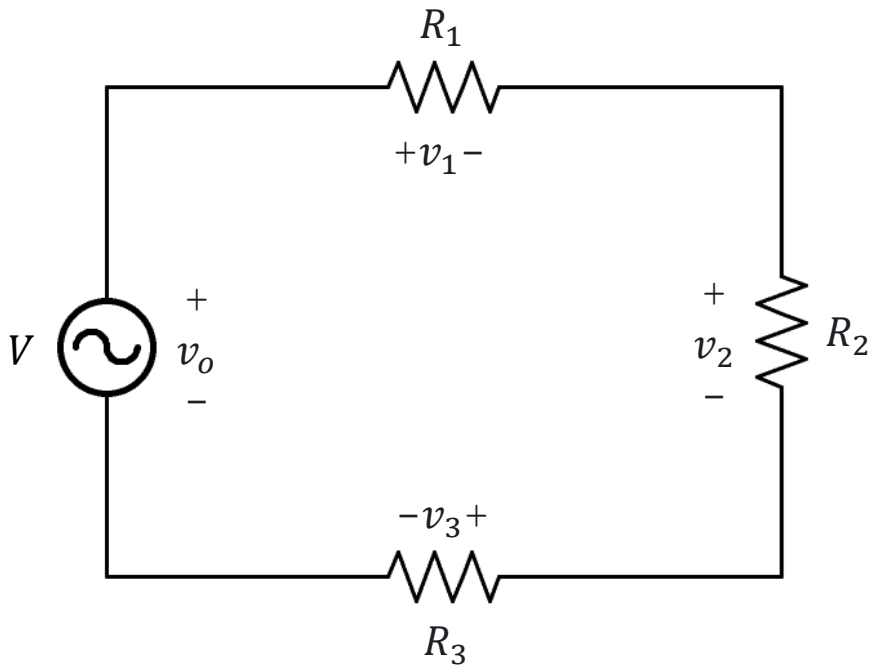
VOLTAGE DIVIDER THEOREM

In a series circuit consisting of multiple resistors, the **voltage** across any resistor is **proportional** to its resistance relative to the equivalent resistance of the series combination.

Formula

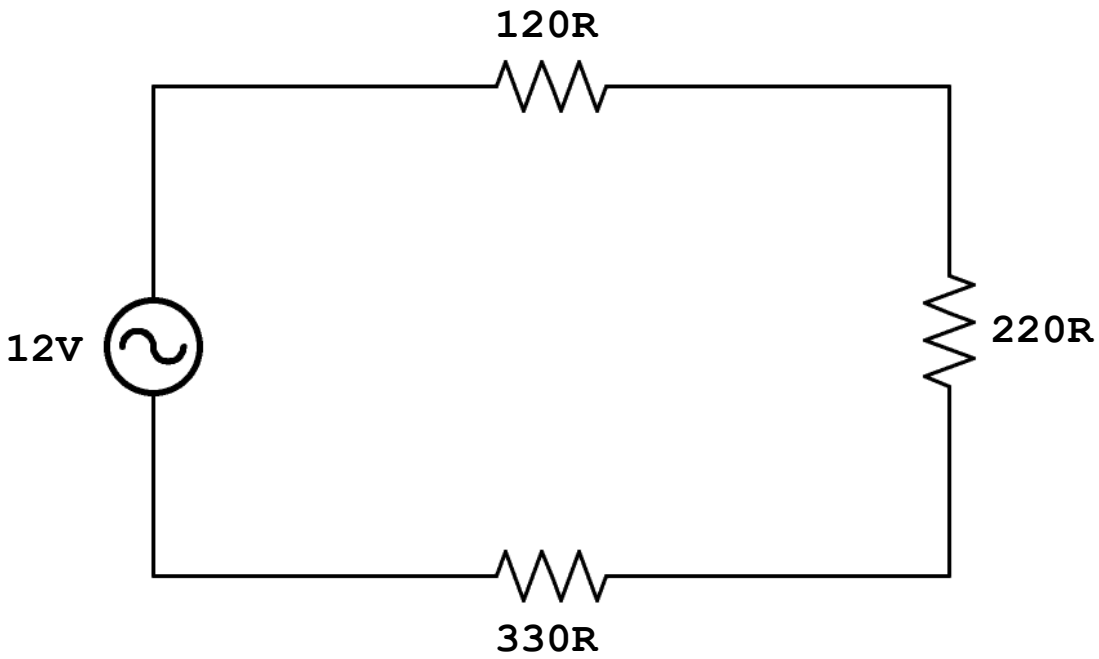
$$v_N = v_{in}\frac{R_N}{R_{eq}}$$

Series Network



EXERCISE

For the given series circuit, determine the voltage drops across each individual resistor.



Solution

CURRENT DIVIDER THEOREM

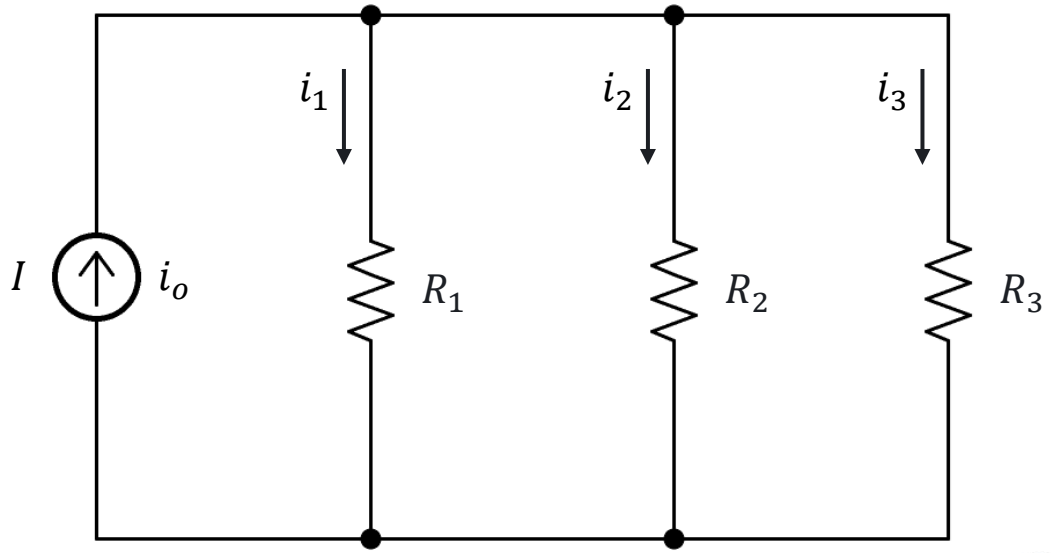
CURRENT DIVIDER THEOREM

In a parallel circuit with multiple resistors, the **current** through any resistor is **inversely** proportional to its resistance relative to the equivalent resistance of the parallel combination.

Formula

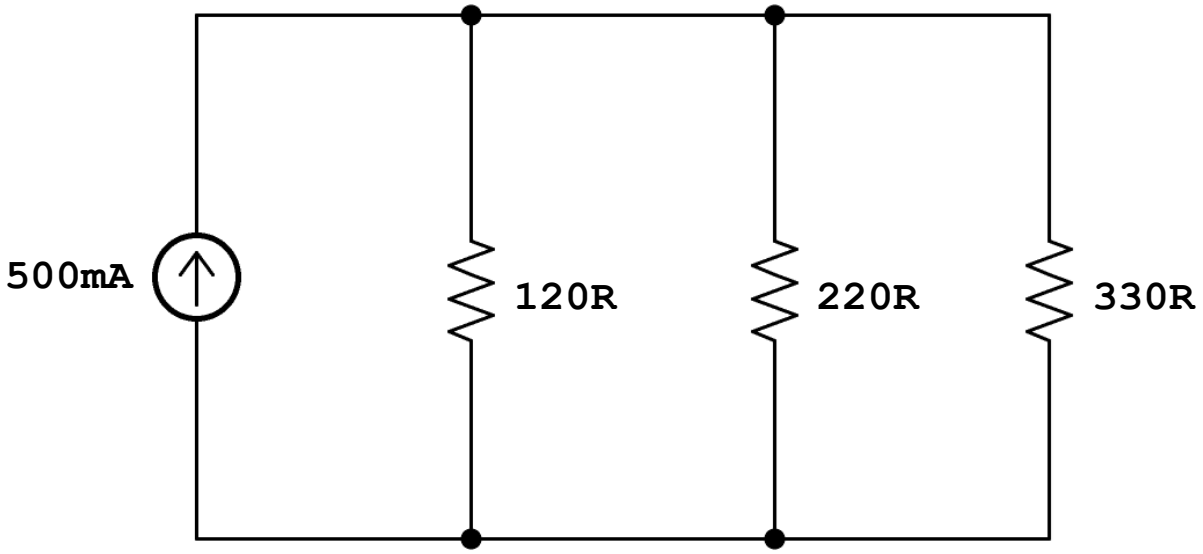
$$i_N = i_{in}\frac{R_{eq}}{R_N}$$

Parallel Network



EXERCISE

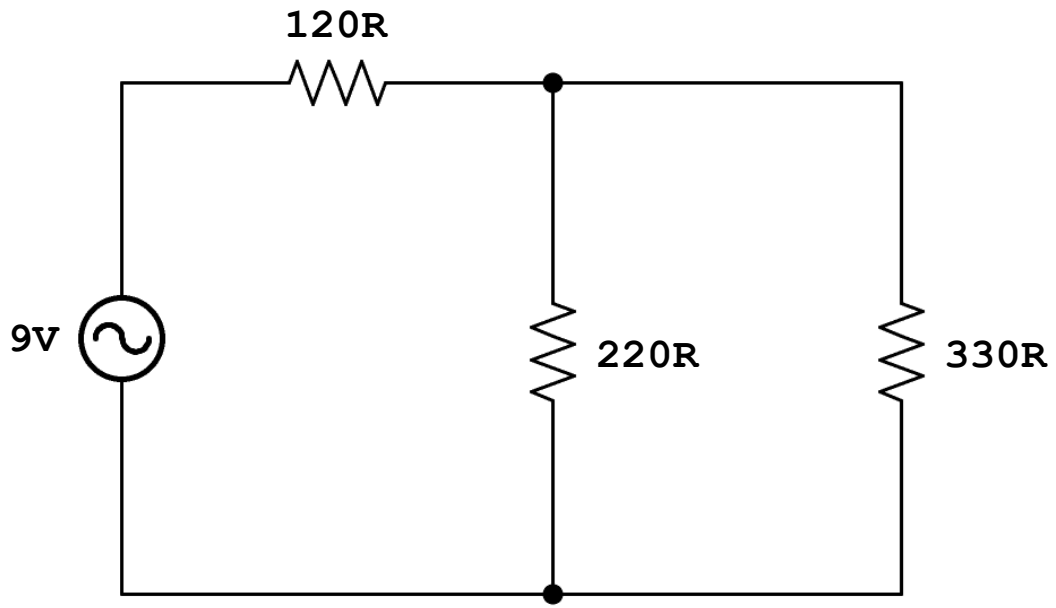
For the given parallel circuit, determine the current flowing through each individual resistor.



Solution

EXERCISE

Analyze the given circuit to determine both the current through and the voltage drop across each resistor.



Solution

LABORATORY