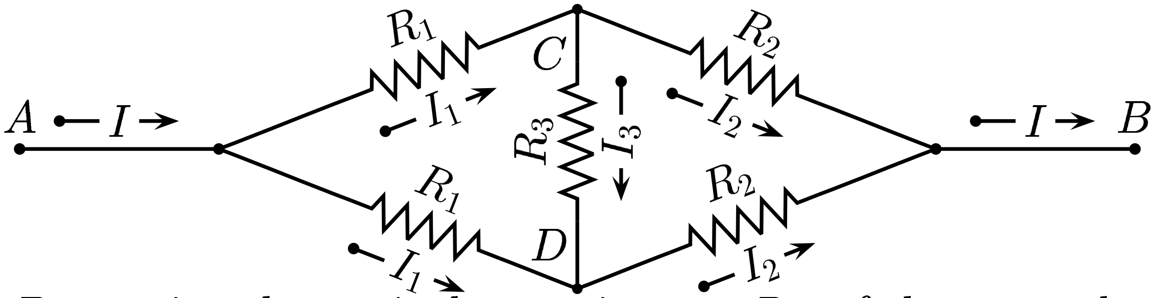
The current enters at A and leaves at B.



Determine the equivalent resistance R_{eq} of the network.

A) $R_{eq} = R_1 + R_2$

B) $R_{eq} = \frac{1}{2}(R_1 + R_2)$

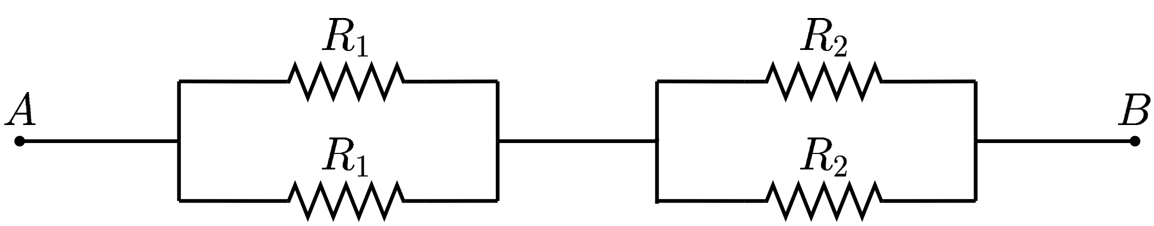
C) $R_{eq} = \frac{R_1 R_2 + R_1 R_3 + R_2 R_3}{R_1 + R_2}$

D) $R_{eq} = \frac{1}{2}\frac{R_1 R_2 + R_1 R_3 + R_2 R_3}{R_1 + R_2}$

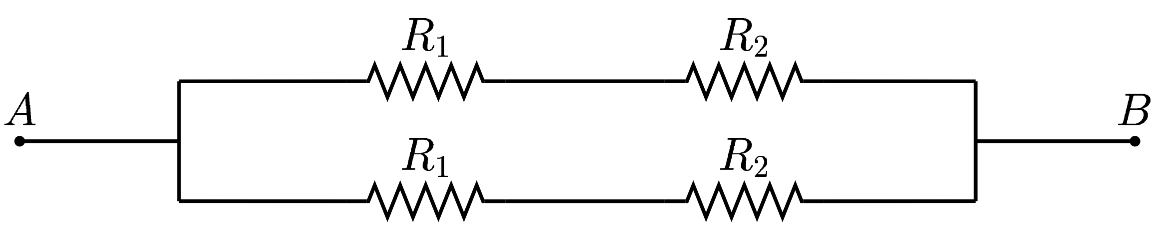
E) $R_{eq} = \frac{1}{2}\frac{R_1 R_2 + R_1 R_3 + R_2 R_3}{R_3}$

Hint: The network is symmetric.

The left-hand and right-hand loop equations are $-I_1 R_1 - I_3 R_3 + I_1 R_1 = 0$ and also $-I_2 R_2 + I_2 R_2 + I_3 R_3 = 0$ thus $I_5 = 0$.



$$R_{eq} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_1}} + \frac{1}{\frac{1}{R_2} + \frac{1}{R_2}} = \frac{1}{\frac{2}{R_1}} + \frac{1}{\frac{2}{R_2}} = \frac{1}{2}R_1 + \frac{1}{2}R_2 = \frac{1}{2}(R_1 + R_2)$$



$$R_{eq} = \frac{1}{\frac{1}{R_1 + R_2} + \frac{1}{R_1 + R_2}} = \frac{1}{\frac{2}{R_1 + R_2}} = \frac{1}{2}(R_1 + R_2)$$

Answer **C**.

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