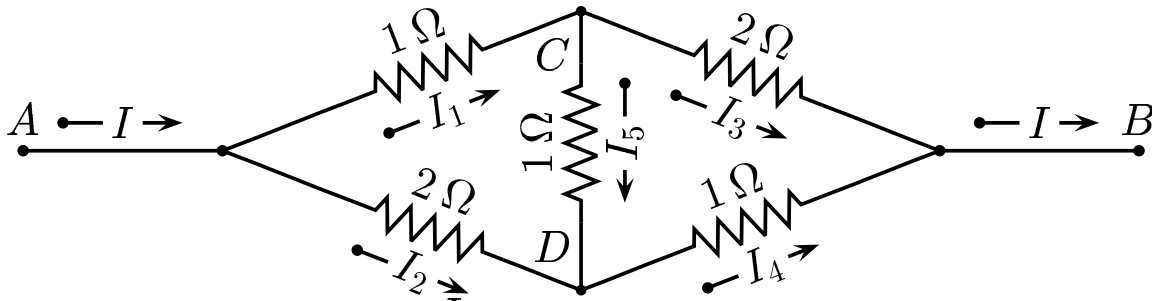


The current enters at A and leaves at B .



Determine the ratio $\frac{I_2}{I_1}$.

- A) $\frac{I_2}{I_1} = \frac{1}{2}$
- B) $\frac{I_2}{I_1} = \frac{1}{3}$
- C) $\frac{I_2}{I_1} = \frac{2}{3}$
- D) $\frac{I_2}{I_1} = 1$

Hint: From symmetry, $I_1 = I_4$. Then for the junction equation $I_5 = I_4 - I_2 = I_1 - I_3$. Write down the loop equation for $ACDA$.

The left-hand loop equation is

$$\begin{aligned}
 -I_1 (1 \Omega) - I_5 (1 \Omega) + I_2 (2 \Omega) &= 0 \\
 -I_1 (1 \Omega) - (I_4 - I_2) (1 \Omega) + 2 I_2 (1 \Omega) &= 0 \\
 -I_1 (1 \Omega) - I_4 (1 \Omega) + I_2 (1 \Omega) + 2 I_2 (1 \Omega) &= 0 \\
 -I_1 (1 \Omega) - I_1 (1 \Omega) + 3 I_2 (1 \Omega) &= 0 \\
 -2 I_1 (1 \Omega) + 3 I_2 (1 \Omega) &= 0 \\
 +3 I_2 (1 \Omega) &= 2 I_1 (1 \Omega) \\
 \frac{I_2}{I_1} &= \frac{2 (1 \Omega)}{3 (1 \Omega)} \\
 &= \frac{2}{3}.
 \end{aligned}$$

Answer **C**.