Consider the circuit shown.

\[ \frac{1}{R_{eq}} = \frac{1}{12} + \frac{1}{6} = \frac{1}{3} \]

\[ 5R + 3R + 2R = 10R \]

a) How much current flows through the 4Ω resistor? Draw an arrow to show the direction of the conventional (i.e., positive current).

Current through right loop: \( \frac{10V}{10\, \Omega} = 1\, A \)

\( \Rightarrow \) Voltage across either 12Ω or 4Ω: \( 3R \cdot 1A = 3V \)

\( \hat{I}_{4Ω} = \frac{3V}{4Ω} = 0.75\, A \)

b) What is the voltage across the 12 V resistor?

3V - see above

c) How much power is being converted to heat in the 5Ω resistor?

\[ P = I^2 R = (1A)^2 \cdot 5Ω = 5\, W \]

d) How much current flows through the 10 V battery. Draw an arrow to show the direction of the conventional (i.e., positive current).

Current in left loop: \( \frac{(15V - 10V)}{2R} = 2.5\, A \)

Consider junction above 10V battery:

\( \hat{I}_{batt} = 2.5A - 1A = 1.5\, A \)