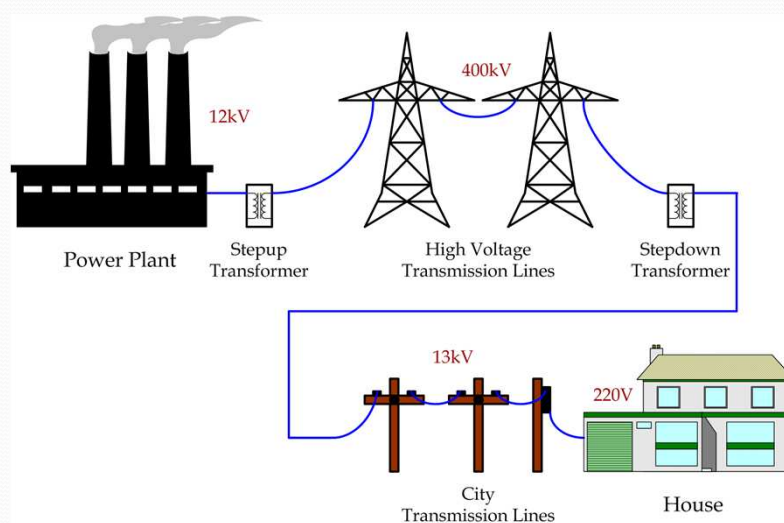


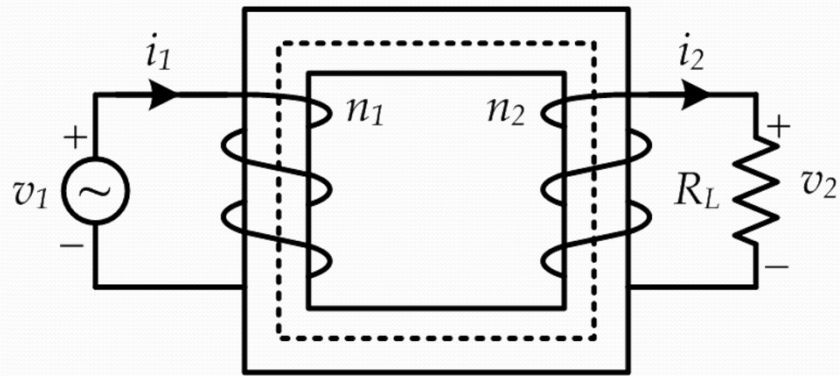
# Transformer Circuits

## Section 08

### Power Transmission



# Ideal Transformer



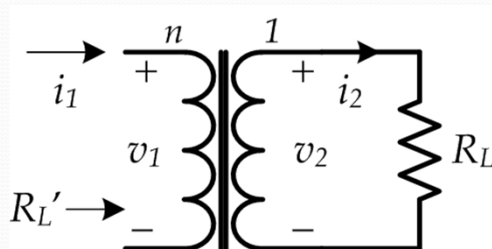
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# Ideal Transformer Equations

$$\begin{aligned} v_2 &= \frac{v_1}{n} \\ i_2 &= n \times i_1 \\ R_L' &= n^2 \times R_L \\ \hline v_1 \cdot i_1 &= v_2 \cdot i_2 \end{aligned}$$

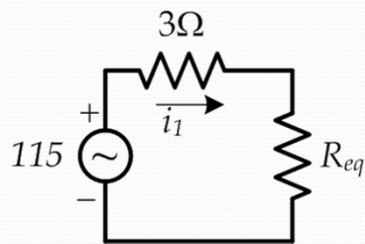
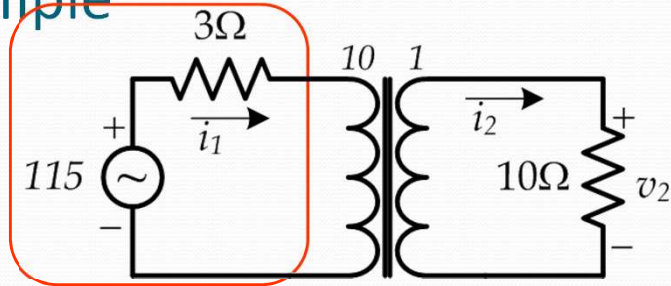


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## Example



$$R_{eq} = \left(\frac{10}{1}\right)^2 \times 10 = 1000\Omega$$

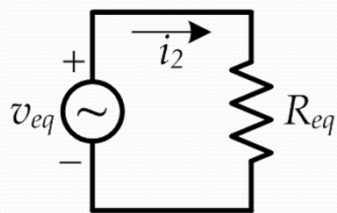
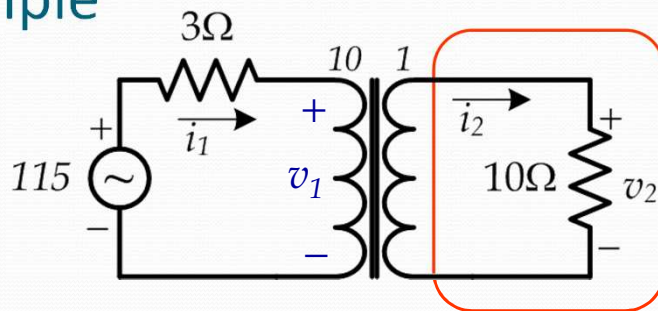
$$i_1 = \frac{115}{3 + 1000} = 0.1147\text{ A}$$

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## Example



$$v_1 = 115 - i_1 \times 3 = 114.7\text{ V}$$

$$v_2 = \frac{1}{10} \times v_1 = 11.47\text{ V}$$

$$i_2 = \frac{11.47}{10} = 1.147\text{ A}$$

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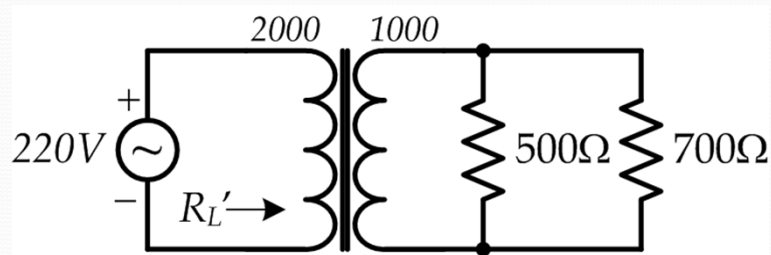
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## Process Check



- turn ratio of 2000:1000
- Loads:  $500\Omega$  and  $700\Omega$ .
- What does the source see?



*Ideas to solve it?!*

