Ch 7
Sec 7.3A
obj: How does a transformer change the voltage of an alternating current?

Transformer

- Two separate coils that are wrapped around a single core.
  - * Primary Coil - Connected to an AC source
  - * Secondary Coil - Connected to an external circuit.
- The primary and secondary coils are not connected.
- The purpose of a transformer is to change AC Voltage.

Step-Up + Step Down Transformers

- Step-Up Voltage Transformer increases the voltage from the primary coil.
  - * The number of turns in the secondary coil is greater than that in the primary coil.
  - * Turns ratio is used to determine how the voltage changes.

$$\text{Turns Ratio} = \frac{\#\text{Turns Secondary}}{\#\text{Turns Primary}}$$

  - * The turns ratio is a multiplier of the primary voltage.

Turns Secondary = 100
Turns Primary = 50

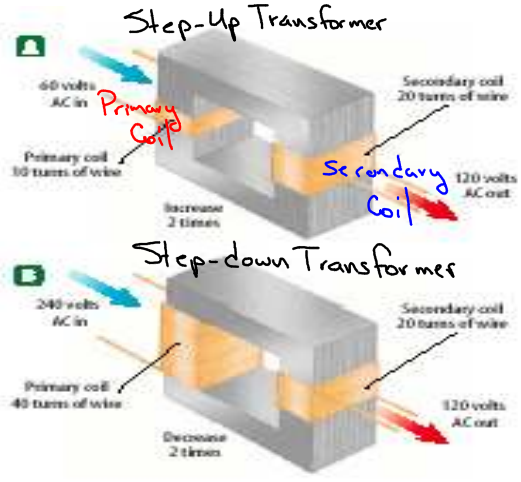
$$\text{Turns Ratio} = \frac{100}{50}$$

$$= 2$$

- Stepdown Voltage Transformer
  * Reduces the voltage from the primary coil.
    * # of turns in the primary coil is greater than that in the secondary coil.

Turns in Secondary = 25
Turns in Primary = 100

$$\text{Turns Ratio} = \frac{25}{100} = .25$$



* When a transformer changes Voltage it also changes current.
  * A step-up voltage transformer will decrease the current in the secondary coil.

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