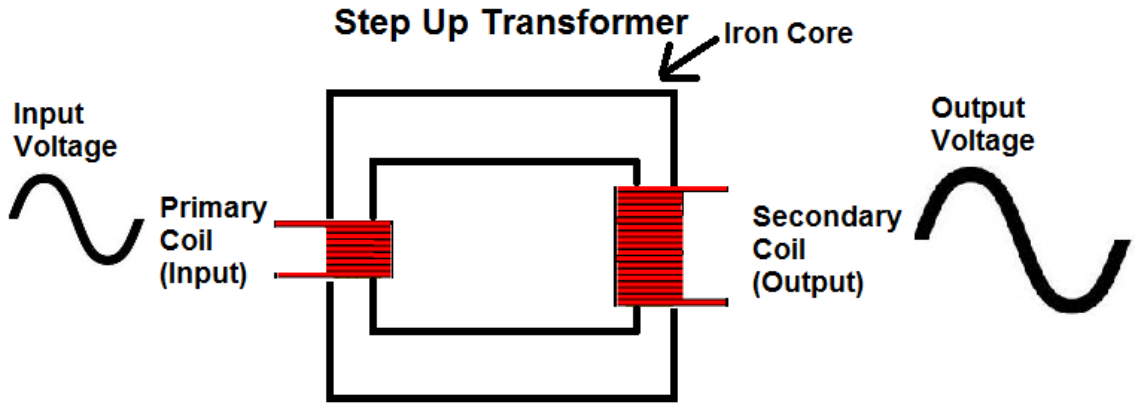
# Step up Transformer

- More turns in secondary coil
- Voltage is increased (stepped up).
- Current is decreased by the same factor.

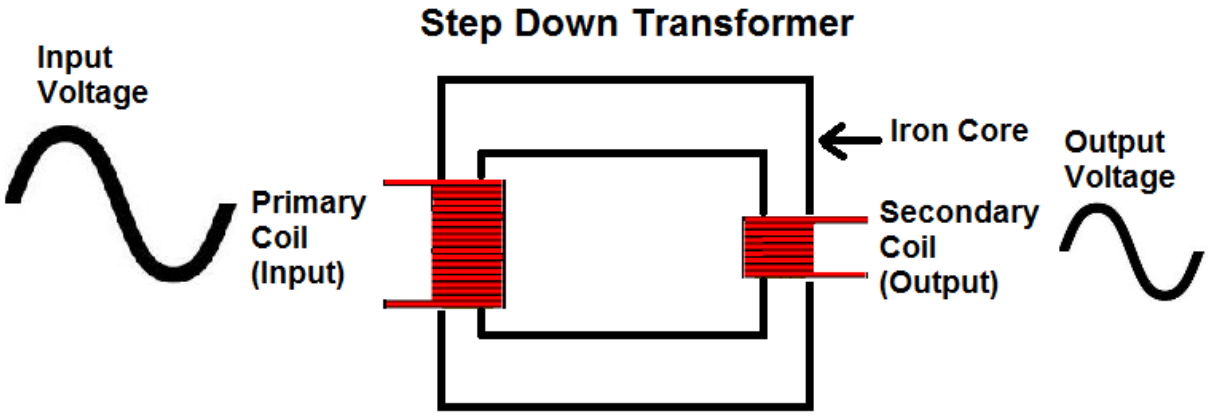



Power in = Power out

$V_p \cdot I_p = V_s \cdot I_s$

# Step down Transformer

- Less turns in secondary coil
- Voltage is *decreased* (stepped down).
- Current is *increased* by the same factor.




Power in = Power out

$V \cdot I = V \cdot I$

- Transformer relationship:

$$\frac{\text{Primary voltage}}{\text{Number of primary turns}} = \frac{\text{secondary voltage}}{\text{number of secondary turns}}$$

Ex 1. The primary coil of a transformer connected to 120 V has 30 turns. The secondary has 3000 turns. What is the output voltage at the secondary?

Is this a step up or step down transformer?

- Transformer relationship:

$$\frac{\text{Primary voltage}}{\text{Number of primary turns}} = \frac{\text{secondary voltage}}{\text{number of secondary turns}}$$

Ex 2. The primary coil of a transformer connected to 120 V has 600 turns. The secondary has 30 turns. What is the output voltage at the secondary?

Is this a step up or step down transformer?