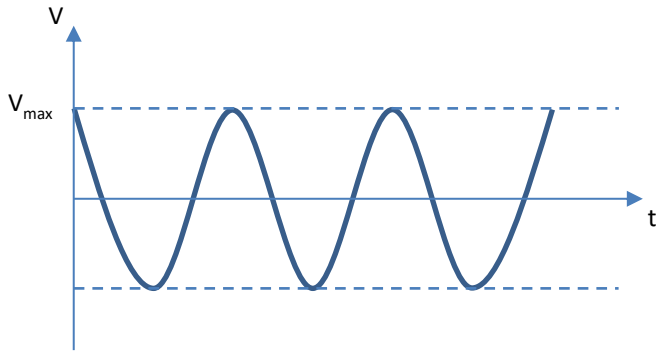
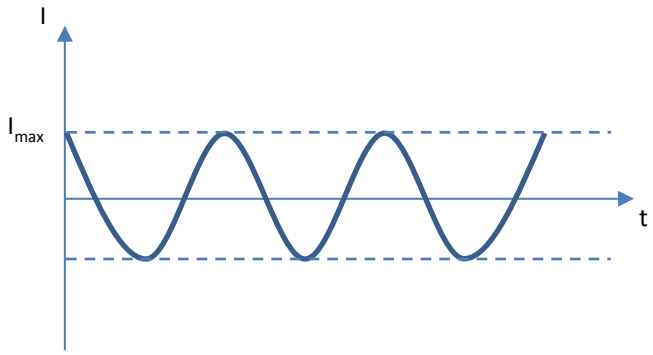
CONCEPT: RMS CURRENT AND VOLTAGE

● In alternating current circuits, what is the average of the voltage and the current?





- The average of the voltage and the current is _____

● A better "average" value is the RMS VALUE, the _____ _____ _____

● To find the RMS value, you take the square, then the average, then the square root

$$X \rightarrow X^2 \rightarrow (X^2)_{av} \rightarrow \sqrt{(X^2)_{av}}$$

● The RMS CURRENT and VOLTAGE are defined by

- $I_{RMS} = \frac{I_{max}}{\sqrt{2}}$ **or** $I_{max} = \sqrt{2} I_{RMS}$
- $V_{RMS} = \frac{V_{max}}{\sqrt{2}}$ **or** $V_{max} = \sqrt{2} V_{RMS}$

EXAMPLE: If the RMS voltage of an outlet in the US is 120 V, what is the maximum voltage of an outlet? If you complete a simple circuit with this AC source by connecting a 12 Ω resistor, what is the RMS and maximum current in this circuit?

PRACTICE: RMS CURRENT IN AN AC CIRCUIT

An AC source operates with a 0.05 s period. 0.025 s after the current is at a maximum, the current is measured to be 1.4 A. What is the RMS current of this AC circuit?