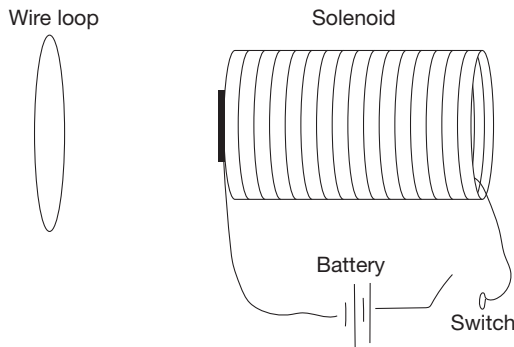


AP Physics 2 Review Questions

Integrating Content, Inquiry and Reasoning

1. Recall that a current-carrying wire produces a magnetic field. The magnetic field of a long line of current-carrying wire loops is analogous to the field of a bar magnet. The diagram below shows a copper wire loop near a *solenoid*, a long line of wire loop. The switch in the circuit is initially open.



- a. Predict whether current will flow through the wire of the loop in each of the following cases. Explain your reasoning.

i. Just after the switch has been closed.

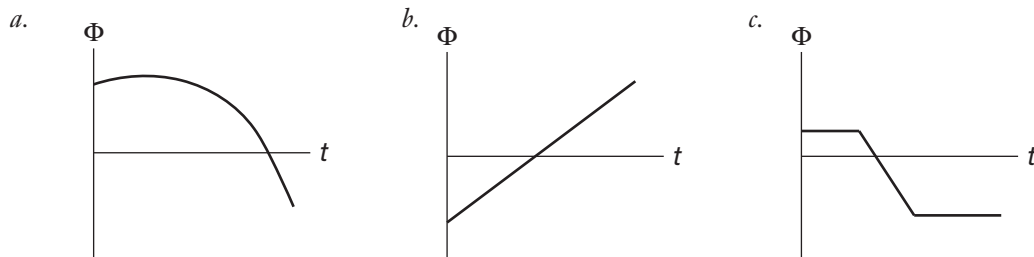
ii. A long time after the switch has been closed.

iii. Just after the switch has been reopened.

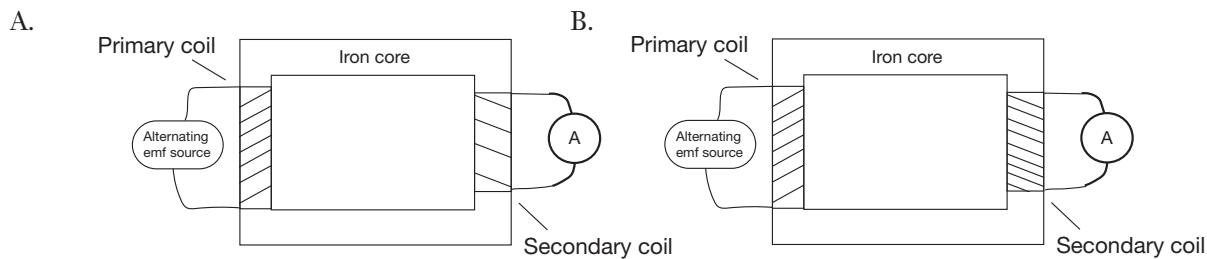
iv. A long time after the switch has been reopened.

2. An induction stovetop has a smooth surface. When on high, the surface does not feel warm, yet ramen noodles are quickly cooked when cooked in a metal bowl. However, when an attempt is made to cook the noodles in a ceramic bowl, the noodles remain cold. Explain how the stovetop works.

3. The magnetic flux through three different coils is changing as shown in the figures below. For each situation, draw a corresponding graph showing qualitatively how the induced emf changes with time.



4. A transformer consists of two coils, each wrapped around an iron core. The core confines the magnetic field produced by the electric current in one coil so that it passes through the second coil without spreading outside. The primary coil in each situation below is connected to identical emf sources.



Which ammeter would register the higher secondary emf output? Explain your reasoning.