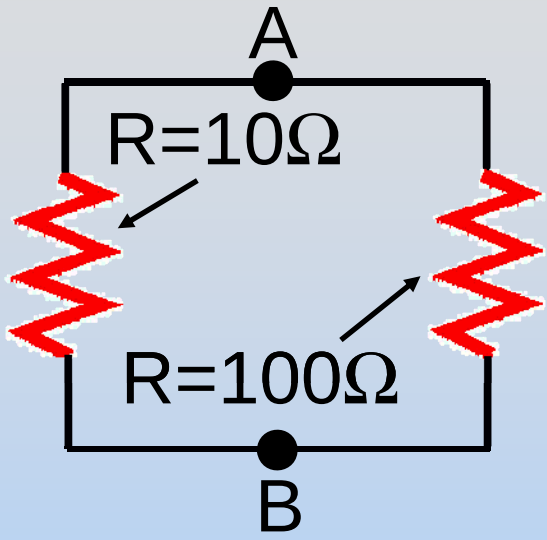
Concept Question: Faraday Circuit

A magnetic field B penetrates this circuit outwards, and is increasing at a rate such that a current of 1 A is induced in the circuit (which direction?).

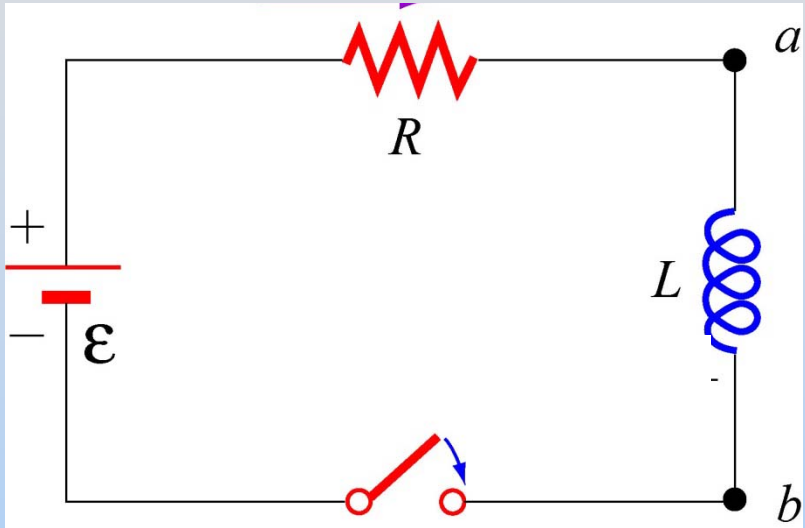


The potential difference VA-VB is:

1. **+10 V**
2. **-10 V**
3. **+100 V**
4. **-100 V**
5. **+110 V**
6. **-110 V**
7. **+90 V**
8. **-90 V**
9. **None of the above**

Concept Question: Voltage Across Inductor

In the circuit at right the switch is closed at $t = 0$. A voltmeter hooked across the inductor will read:



1. $V_L = \varepsilon e^{-t/\tau}$
2. $V_L = \varepsilon(1 - e^{-t/\tau})$
3. $V_L = 0$
4. I don't know

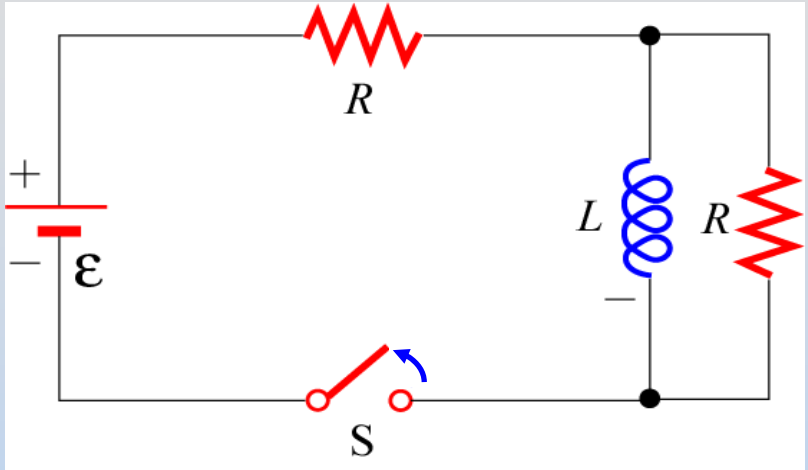
Concept Question: Inserting a Core

When you insert the iron core what happens?

1. B Increases so L does too
2. B Decreases so L does too
3. B Increases so L Decreases
4. B Decreases so L Increases
5. I don’t know

Concept Q.: RL Circuit

In the circuit at right the switch S has been closed a very long time. At t = 0, the switch is opened. Taking downward current as positive, immediately after the switch is opened the current in the inductor is equal to



1. ε/R
2. $\varepsilon/2R$
3. $-\varepsilon/R$
4. $-\varepsilon/2R$
5. Zero
6. I don't know

8.02SC Physics II: Electricity and Magnetism

Fall 2010