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Crash Course Physics #34: Induction

Name: _____ Date: _____

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- Electric currents can create magnetic fields, and changing magnetic fields can induce an electric _____.
- Magnetic fields only induce a current when they are _____ with time.
- The principle that explains how a changing magnetic field induces emf is called _____ Law of Induction.
- The term "emf" stands for _____.
- A changing magnetic field induces an _____ in a loop of wire.
- Three factors that affect magnetic flux are the magnetic field strength (B), the loop's area (A), and the _____ between the field and the loop.
- Magnetic flux is represented by the symbol _____.
- Magnetic flux is calculated using the equation: $\Phi_B = B \times A \times \cos\theta$.
- Magnetic flux is measured in units of _____.
- The emf induced in a loop is equal to the negative change in magnetic flux over change in _____.
- To find the total emf in a coil, multiply the emf in one loop by the number of _____ in the coil.
- _____ Law says that the magnetic field from an induced current will oppose the change in magnetic flux.
- The _____ rule can help determine the direction of the induced current.
- The change in magnetic flux can also be caused by changing the _____ of the loop within the magnetic field.
- When a loop is pulled out of a magnetic field, the induced emf is equal to $B \times L \times$ _____.

Crash Course Physics #34: Induction KEY

- Electric currents can create magnetic fields, and changing magnetic fields can induce an electric **current**.
- Magnetic fields only induce a current when they are **changing** with time.
- The principle that explains how a changing magnetic field induces emf is called **Faraday's Law** of Induction.
- The term "emf" stands for **electromotive force**.
- A changing magnetic field induces an **emf** in a loop of wire.
- Three factors that affect magnetic flux are the magnetic field strength (B), the loop's area (A), and the **angle** between the field and the loop.
- Magnetic flux is represented by the symbol **Φ_B** .
- Magnetic flux is calculated using the equation: $\Phi_B = B \times A \times \cos\theta$.
- Magnetic flux is measured in units of **webers**.
- The emf induced in a loop is equal to the negative change in magnetic flux over change in **time**.
- To find the total emf in a coil, multiply the emf in one loop by the number of **loops** in the coil.
- Lenz's Law** says that the magnetic field from an induced current will oppose the change in magnetic flux.
- The **right-hand rule** can help determine the direction of the induced current.
- The change in magnetic flux can also be caused by changing the **area** of the loop within the magnetic field.
- When a loop is pulled out of a magnetic field, the induced emf is equal to $B \times L \times$ **velocity**.

15 Questions

Answer Key Included

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