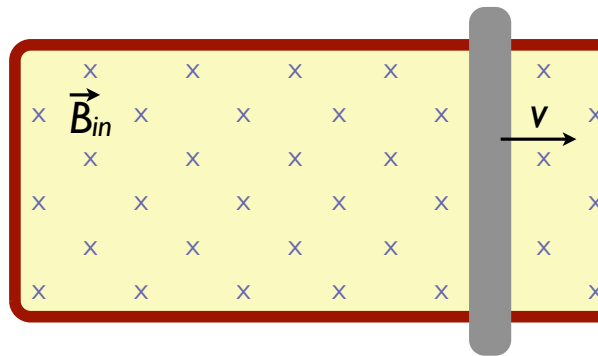


### Quiz 5: Magnetism and Induction

1. Consider a solenoid that is very long compared to the radius. Of the following choices, the most effective way to increase the magnetic field in the interior of the solenoid is to
  - double its length, keeping the number of turns per unit length constant
  - reduce its radius by half, keeping the number of turns per unit length constant
  - overwrapping the entire solenoid with an additional layer of current-carrying wire.
2. A magnet and a non-magnet of the same mass are dropped into conducting copper tubes of equal length. Which takes longer to come out?
  - The magnet.
  - The non-magnet.
  - It takes the same amount of time.



3. A conducting bar slides on two fixed conducting rails, as shown above, with a constant magnetic field pointing into the page. What are the directions of the induced current and the force on the bar, respectively?
  - Counterclockwise; to the left
  - Clockwise; to the left
  - Counterclockwise; to the right
  - Clockwise; to the right
4. A switch controls the current in a circuit that has a large inductance. Is a spark more likely to be produced at the switch when:
  - the switch is being closed
  - the switch is being opened
  - it doesn't matter, same probability either way