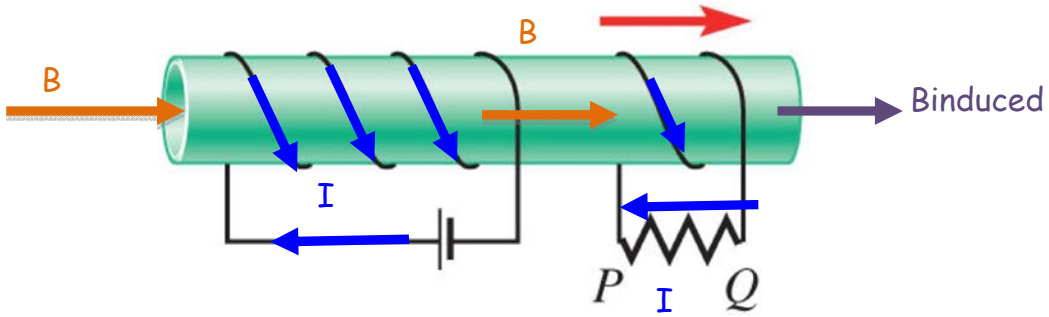
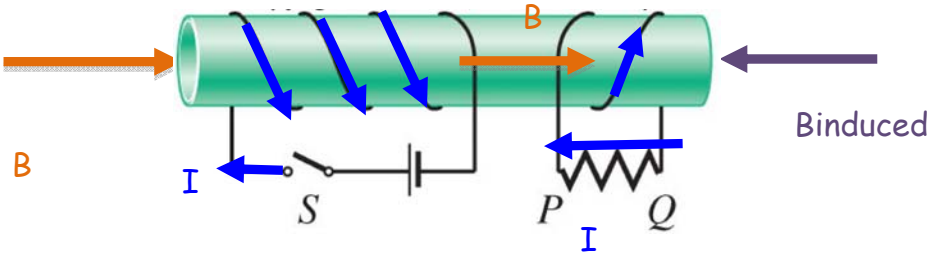
Lenz and Faraday Worksheet: Qualitative

1. a) Draw the direction of the magnetic field and the current in the coil with the battery shown below .

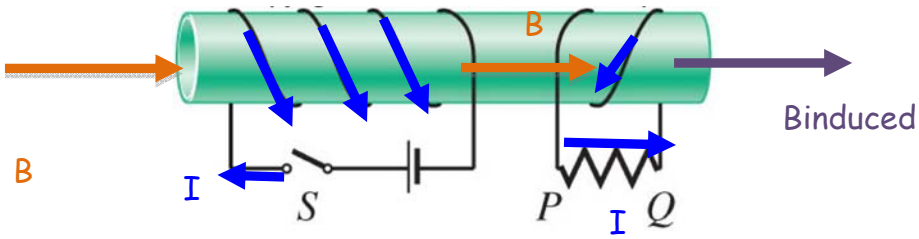


b) As the coil on the right is moved to the right, is the magnetic flux in the coil on the right increasing, decreasing, or staying constant?
c) If the flux is changing, indicate the direction of the induced magnetic field and the current direction in the right hand coil by drawing arrows on the sketch above.

2. a) In both sketches below, draw the direction of the magnetic field and the current in the coil on the left with the battery when the switch is closed.

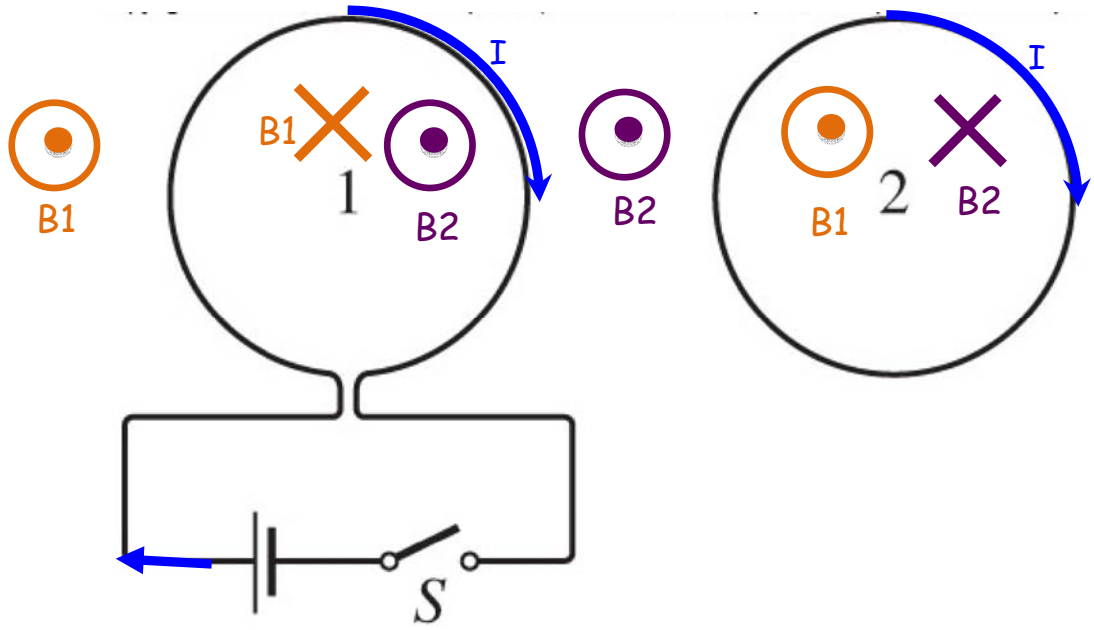


b) As the switch S is closing, is the magnetic flux in the coil on the right increasing, decreasing, or staying constant?
c) If the flux is changing, indicate the direction of the induced magnetic field and the current direction in the right hand coil by drawing arrows on the sketch above.
d) As the switch S is opened, is the magnetic flux in the coil on the right increasing, decreasing, or staying constant?
e) If the flux is changing, indicate the direction of the induced magnetic field and the current direction in the right hand coil by drawing arrows on the sketch below.



Lenz and Faraday Worksheet: Qualitative

3. Two loops of wire are next to one another in the same plane.
a) When the switch S is closed, sketch the direction of the current in loop 1 and sketch the magnetic field inside and outside of loop 1. Label this B1

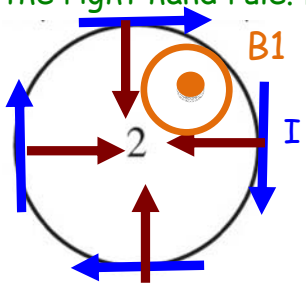


b) As the switch is closed, is the magnetic flux in loop 2 increasing, decreasing, or staying the same?

c) If the magnetic flux in loop 2 is changing, sketch the direction of the current in loop 2 and the direction of the magnetic field, B2 inside and outside of loop 2. Be sure to label this B2 to distinguish from B1. Since B1 is increasing inside loop 2, a current is induced in Loop 2 that creates a magnetic field opposite that of B1 inside loop 2.

d) Is there a magnetic force on loop 2 due to the magnetic field of loop 1? If so, in what direction? Yes. We can use the right hand rule. F=ILXB

F of loop 1 on loop 2



e) Is there a magnetic force on loop 1 due to the magnetic field what direction?

F of loop 2 on loop 1