

Name: _____

Per. _____

Induction Activity

Equipment: 1 small solenoid - 1 galvanometer- 2 wires – 1 magnet- 1 compass;

Setup: Connect Red from solenoid to + of galvanometer; When galvanometer moves to + side Red is acting like the + side of a battery. When galvanometer moves to - side Red is acting like the - side of a battery. Verify with a compass that red part of compass is attracted to S pole of the magnet.

Make electricity

You have everything they need to make electricity and demonstrate it. Just do it. Once it's done, we will get the important aspects.

- 1) What do the magnet and coil have to do to generate electricity?
- 2) Does it matter which side of the magnet is where?
- 3) What happens if you change the direction of the magnet

Induction Guided Questions – Let's try to figure out some rules for how this works.

- 1) Take the N pole and shove it into the coil at the red side.
 - a. What direction was the magnetic field coming from the magnet?
 - b. Was it getting stronger or weaker in the coil? How do you know?
 - c. What direction did the current go in the coil? How do you know?
 - d. What direction was the magnetic field made by the coil? How do you know?
 - e. What is the relationship between the change in field of the magnet and the field created by the coil?
- 2) Take the N pole and remove it from the coil at the red side.
 - a. What direction was the magnetic field coming from the magnet?
 - b. Was it getting stronger or weaker in the coil? How do you know?
 - c. What direction did the current go in the coil? How do you know?

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- d. What direction was the magnetic field made by the coil? How do you know?
 - e. What is the relationship between the change in field of the magnet and the field created by the coil.
- 3) Take the S pole and shove it into the coil at the red side.
- a. What direction was the magnetic field coming from the magnet?
 - b. Was it getting stronger or weaker in the coil? How do you know?
 - c. What direction did the current go in the coil? How do you know?
 - d. What direction was the magnetic field made by the coil? How do you know?
 - e. What is the relationship between the change in field of the magnet and the field created by the coil?
- 4) Take the S pole and remove it from the coil at the red side.
- a. What direction was the magnetic field coming from the magnet?
 - b. Was it getting stronger or weaker in the coil? How do you know?
 - c. What direction did the current go in the coil? How do you know?
 - d. What direction was the magnetic field made by the coil? How do you know?
 - e. What is the relationship between the change in field of the magnet and the field created by the coil.

The amount of magnetic field in the loop is called flux, ϕ . However, as we have seen, flux does not make electricity. Changing the flux makes electricity. Flux can be found by: $\phi = BA\cos\theta$. Therefore, a change in flux can be found by either changing B, the strength of the field in the loop, changing A, the area of the loop, or changing θ , the orientation of B and A.