**Lab Activity Handout #3 KEY**

1. Check for polarity and magnetism with the compass by bringing it close to the coil ends.

**o The opposite ends of the coil have different magnetic poles, so each coil end will attract the opposite end of the compass needle.**

1. See if the coil will attract a paper clip. **o Yes, it will.**

(note: Try both ends of the coil.)

K. Disconnect the battery.

Answer the following questions and hand in for a grade.

1. Explain why both ends of the electromagnet, with the bolt in position, will pick up the paper clips.

* 1. **The induced field in the paper clip mirrors the coil field and the paper clips can rotate to allow opposite polarities to attract.**

1. Why was the coil weaker without the bolt?
   1. **The bolt is a good conductor of magnetic field lines, so the field gets stronger with the bolt.**
2. Explain why the polarity observed with the compass was the same with or without the bolt.
   1. **The bolt only affects the magnetic field strength, not the polarity.**