Making and Testing Electromagnets

Electricity All Around Us
Learner Worksheet

Name:

	Distance between the compass and electromagnet	Polarity of the "head end" of the magnet	Number of paper clips lifted by the electromagnet
Electromagnet with 80 turns (no current)			
Electromagnet with 80 turns (current on)			
Electromagnet with 160 turns (no current)			
Electromagnet with 160 turns (current on)			
Electromagnet with 160 turns (current reversed)			

Questions:

1. **What does the compass tell us about the magnetic field around the nail?**

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   _____

2. **How does the number of turns of wire on the nail affect the size of the magnetic field?**

   _____

   _____

3. **Which electromagnet (80 turns or 160 turns) was able to lift the most paper clips in a chain?**

   _____

   _____

4. **What effect does reversing the flow of electricity through the coil have on the polarity of the electromagnet?**

   _____

   _____

   _____

5. **Your electromagnet may be able to pick up paper clips even after the current is removed. Why do you think the nail was still able to attract paper clips?**

   _____

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6. **What do you think the result would be if you had 2 batteries connected to your electromagnet?**

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7. **Why did you sand the enamel coating off the ends of the wire before connecting them to the battery?**

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8. **Why is it important not to leave the electromagnet connected to the battery for more than a few seconds?**

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9. **List a number of appliances or devices in your home or school that have electromagnets in them,**

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