

Electromagnets - sample student worksheet

Name: _____

Date: _____

Part 1. Material checklist and setup

Materials:

- about 2m thin insulated wire
- large iron bolt or nail
- two Dcell batteries
- about 20 loose paperclips

Setup:

Wind the wire tightly around the nail or bolt from end to end. Leave about 20cm of wire off the nail or bolt at each end.



Part 2. Experiment

Doing it:

1. Place the magnet in a pile of the paperclips. Tape the wires to the terminals of a battery and lift the magnet. How many paperclips does it pick up? _____

2. Now tape two Dcell batteries together in series, and repeat step#1. Now how many paperclips does it pick up? _____

3. Now wind a second layer of wire around the nail or bolt.



Connect the new wire to one of the leads coming off the magnet, and then tightly wrap another level or wire around it. Leave about 20cm at the end like before. Now repeat step#1, using first the double battery from step#2, and then with a single battery. Now how many clips does the magnet pick up? with double battery _____ with single battery _____

4. Do more batteries allow more clips to be picked up? _____

Do more windings allow more clips to be picked up? _____