

Magnetism Webquest

Name _____

<http://www.ndt-ed.org/EducationResources/CommunityCollege/MagParticle/Physics/Magnetism.htm>

- 1) What causes magnetism inside the atom?
- 2) Why are unpaired electrons more significant than paired electrons in terms of magnetic properties?
- 3) What causes a material to be classified as “ferromagnetic”? Name some examples of ferromagnetic materials.
- 4) What is a magnetic domain? Sketch two images of a material that has magnetic domains, one that is magnetized and one that is unmagnetized.
- 5) Sketch a bar magnet. Label the poles of the magnet with an “N” and an “S”. Draw magnetic field lines

1. _____
2. _____
3. _____
4. _____

5.

Read the link: <http://science.howstuffworks.com/electromagnet1.htm>

1. Now read the history: History of electromagnets

A. What happens when an electric current passes through a wire?

B. How was that fact discovered?

2. Now read the introduction: [Introduction to how electromagnets work](#)

A. What is the difference between a permanent magnet and an electromagnet?

B. What makes these two types of magnets different?

d. Voltage:

e. Number of Turns in the wire:

2. Can you make the electromagnet pick up all of the iron filings? What conditions did you need?

Uses for electromagnets:

Describe how an electric bell works and provide a diagram

http://www.bbc.co.uk/schools/ks3bitesize/science/energy_electricity_forces/magnets_electric_effects/revise5.shtml

Diagram	How it works

Static Electricity

ELECTROSTATIC SIMULATIONS

In this online lab you will use simulations to check your knowledge regarding electrostatic interactions. Balloons and Static Electricity Simulation

To interactively explore some of the concepts you have learned so far please go to the (<http://phet.colorado.edu/en/simulations/category/physics>).

We will start with the Balloons and Static Electricity simulation:

<http://phet.colorado.edu/en/simulation/balloons>

The simulation “Balloons and Static Electricity” can be run online (choose “Run now”)

Once your application has started, click “Reset All”. Make sure that only the “show all charges” and “wall” buttons are selected.

- 1) Look at the balloon. What can you say about its charge? (Hint: count both types of charges)
- 2) Click and drag the balloon and rub it against the sweater. What happens to the balloon?
- 3) How did the balloon get charged, with what type of charge?
- 4) Where did that charge come from?
- 5) What happened to the sweater? How did it get charged?
- 6) Bring the balloon in the middle, between the sweater and the wall. What happens to the balloon when you let it go? Explain.
- 7) What is the overall charge of the wall?
- 8) What do you think will happen when the balloon is brought close to the wall? Predict first.
- 9) Bring the balloon in contact with the wall. What happens to the charges in the wall?
- 10) Let go of the balloon. What happens? Explain.
- 11) Click the “Reset All” button. Select “show all charges”, and “Two balloons”. What can you tell about the overall charge of all the objects in your simulation window?
- 12) Select “Show charge differences”. Rub each balloon against the sweater. What happens to each one of them?

- 13) Why are the two balloons stuck on the sweater?
- 14) Try to get one balloon off the sweater by using the other balloon. Can you do it? If yes, explain why this is possible.

New simulation "John Travoltage". <http://phet.colorado.edu/en/simulation/travoltage>

(Choose "Run now")

- 1) Predict what will happen to John if he rubs his foot against the carpet.
- 2) Rub John's foot on the carpet by clicking and dragging his foot few times. What happens?
- 3) Predict what will happen if John touches the door knob.
- 4) Click and drag John's hand such that it touched the doorknob. What happened?
- 5) What would you call what happened to John?
- 6) How is this different from the balloon and sweater or balloon and wall touching each other?