

## Electromagnets

Use your textbook to help you fill in the blanks.

### What is an electromagnet?

1. When an electric current flows through a wire, it creates a \_\_\_\_\_ around the wire.
2. An \_\_\_\_\_ is a coil of wire wrapped around a core, usually an iron bar.
3. The magnetic field in the coil of wire causes \_\_\_\_\_ inside the metal core to become magnetic.
4. When a current in an electromagnet stops, the metal core is no longer \_\_\_\_\_.

### How does a loudspeaker work?

5. A \_\_\_\_\_ is a device that changes electrical energy into sound.
6. The \_\_\_\_\_ is the part of the loudspeaker that vibrates to create sound.
7. When electric current flows through the electromagnet, it is pushed and pulled by the \_\_\_\_\_.
8. The movement of the diaphragm produces \_\_\_\_\_.

**Telephones**

9. A telephone receiver is actually a \_\_\_\_\_ .
10. The telephone mouthpiece is like a loudspeaker in \_\_\_\_\_ .
11. A \_\_\_\_\_ is a magnet used to convert sound into electric signals.

**How else are electromagnets used?**

12. Electromagnets are often more useful than ordinary magnets because they can be \_\_\_\_\_ .
13. Electromagnets are used in \_\_\_\_\_ that increase or decrease the voltage of electric currents.
14. They are also found in many household \_\_\_\_\_ such as doorbells, vacuum cleaners, and dishwashers.

**Summarize the Main Idea**

15. Why are electromagnets more useful than permanent magnets?

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|---------------------|------------------|---------------|
| a. current          | d. electromagnet | g. microphone |
| b. diaphragm        | e. generate      |               |
| c. electric signals | f. loudspeaker   |               |

Match the correct letter with the description.

1. \_\_\_\_\_ When a friend calls you on the phone, his or her voice is changed into this.
2. \_\_\_\_\_ This device uses a magnet to convert sound into electrical signals.
3. \_\_\_\_\_ The part of the loudspeaker that vibrates to create sound
4. \_\_\_\_\_ A device that changes electrical energy into sound
5. \_\_\_\_\_ To make an electric current
6. \_\_\_\_\_ When this is turned off, the electromagnet is no longer magnetic.
7. \_\_\_\_\_ A coil of wire wrapped around a core of iron

## Electromagnets

diaphragm	electromagnet	Michael Faraday
electric current	loudspeaker	microphone
electric signals	magnetic field	sound

Electromagnets are very useful in our daily lives. In the 1820s, \_\_\_\_\_ and Joseph Henry made discoveries about electric current and magnets. They discovered that magnets could generate an \_\_\_\_\_. When the current is flowing, it creates a \_\_\_\_\_ around the wire. When the current is turned off, the \_\_\_\_\_ is no longer magnetic.

A loudspeaker is a device that changes electrical energy into \_\_\_\_\_. The \_\_\_\_\_ is the part of the loudspeaker that vibrates to create sound. A telephone also has a tiny \_\_\_\_\_. A friend's voice on the phone is changed into \_\_\_\_\_. The mouthpiece of the phone contains a \_\_\_\_\_ that uses a magnet to convert sound into electrical signals. Electromagnets are used in many household appliances and toys.