Magnets & Magnetic Fields

The invisible pull that fills the space around a magnet

The Big Idea

*A **magnet** can move things without touching them — because the space all around it is filled with an invisible, real force called a **field**.*

The field is there even when nothing shows it. Sprinkle iron dust near a magnet and the field draws its own picture: curving lines that pour out of one end, sweep around, and dive back into the other end.

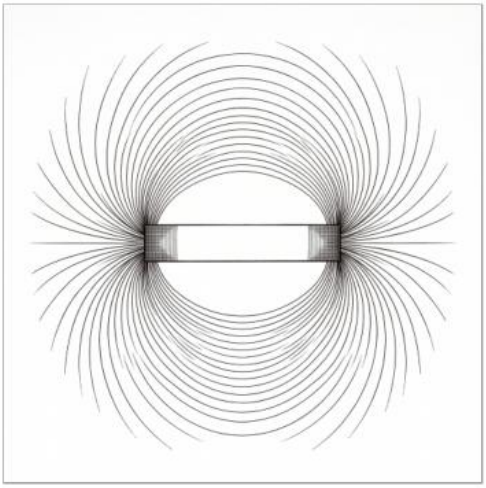


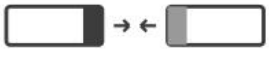
*Fig. 1 — the **field**: the invisible reach all around a magnet. Every line leaves one pole and curves home to the other.*

Magnets Are Picky

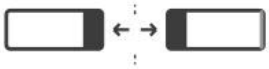
A magnet does **not** grab all metal. It ignores a penny, a soda can, and most jewelry. It grabs only **iron** — and **steel**, which is mostly iron. *If the magnet grabs it, there is iron inside.*

The Two Ends

Every magnet has two ends called **poles** — where the pull is strongest. The two ends are not the same:



*different ends **attract** — pull together*



*matching ends **repel** — push apart*

Words to Know

magnet · pole · iron · field · steel · attract · repel

magnet — a piece of metal with an invisible pull · pole — one of the two ends, where the pull is strongest · iron — the metal magnets grab · field — the invisible reach all around a magnet · attract — pull together · repel — push apart

Watch For This in Everyday Life

- Test the fridge magnets — *"what is really holding this up: the paper, or steel hiding under the paint?"*
- Hunt the kitchen for a metal the magnet ignores — *"the foil and the soda can are metal… so why won't it grab them?"*
- Find the hidden magnets in the house — cabinet latches, purse clasps, the knife strip — *"how did you know a magnet was in there?"*
- When a magnet works through a door or a tabletop — *"what is the pull passing through?"*