

FOUNDATIONS OF PHYSICS

MAGNETISM



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CHAPTER 1

HOW DO MAGNETS WORK?



A photo sticks to the refrigerator.
The refrigerator door seals shut.
What do these have in common?
They use magnets!

Magnets are metals that **attract** certain other kinds of metal. They can also **repel**. This pull or push **force** is called magnetism.

magnetism





magnet

Magnets stick to metal objects, such as lockers and cars. They also stick to some rocks. Why? These also have magnetic metals, such as iron and nickel.

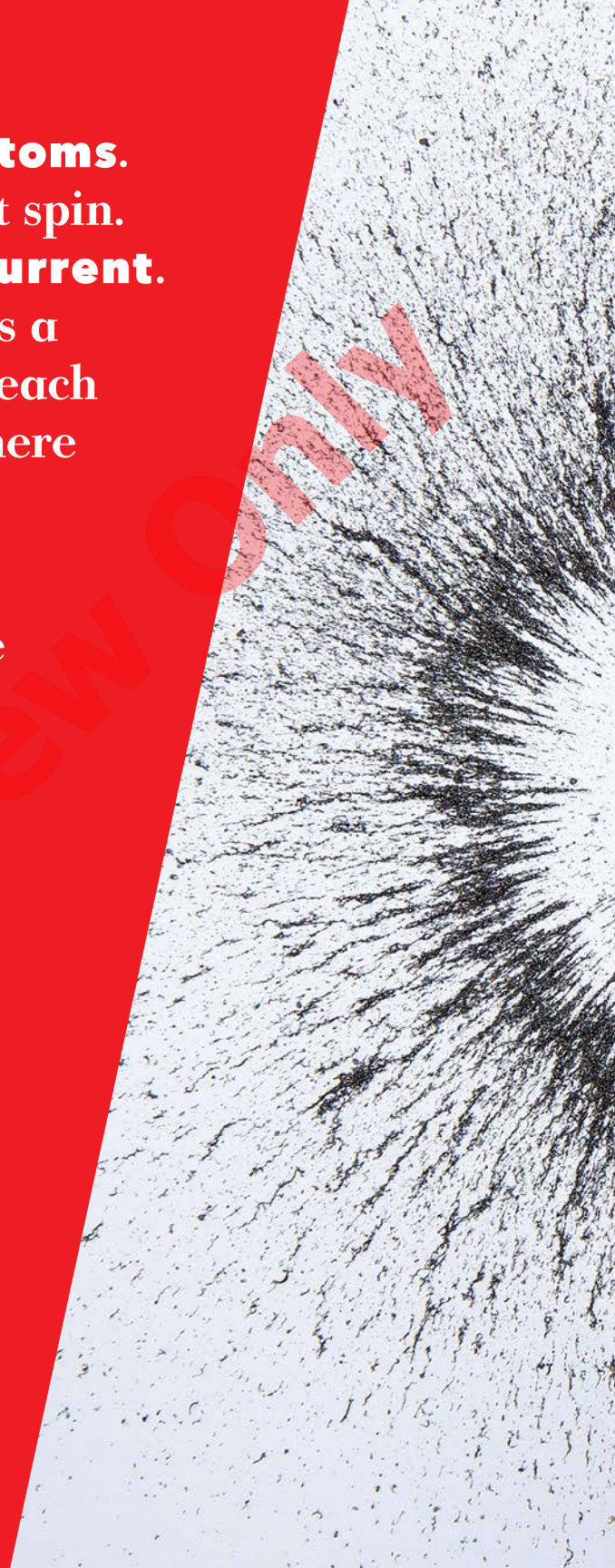
DID YOU KNOW?

Some magnets are so strong they can lift cars! These magnets are used on cranes to move cars.



All objects are made of **atoms**.
Atoms have **charges** that spin.
This makes an **electric current**.
The electric current forms a
magnetic field around each
atom. These fields are where
magnetism is at work.

In magnetic objects, the
fields add up. They make
one big magnetic field.



magnetic
field



ACTIVITIES & TOOLS

TRY THIS!

MAKE TEMPORARY MAGNETS

See which household items can become magnets with this fun activity!

What You Need:

- two paper clips
- a magnet
- coins

- 1 Leave a paper clip on a magnet for five minutes. Did the paper clip stick to the magnet?
- 2 Take the paper clip off the magnet.
- 3 Gently rub the paper clip on the second paper clip. Did the first paper clip turn into a magnet and attract the second paper clip? Why do you think this happens?
- 4 Repeat Steps 1 through 3 but leave the paper clip on the magnet for one hour instead. Is it easier to pick up the second paper clip now?
- 5 Try Steps 1 through 4 with coins instead of paper clips. Does the coin become a magnet?
- 6 Try other items instead of paper clips or coins. Some items may take longer than others to become magnetic. Which items become magnets? Which items do not? Why do you think this is the case?

