Magnetism

Make Your Own Magnet

NCF and/or NCERT Learning Outcomes:

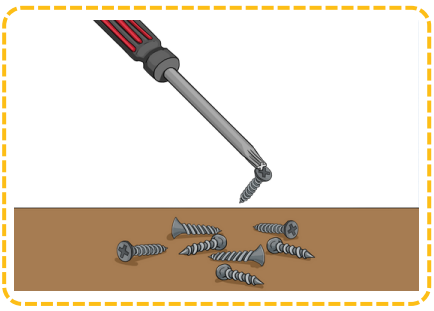
- Understand how a temporary magnet can be made using a permanent magnet.
- Understand and classify magnets as permanent or temporary based on their characteristics.

Why Should You Learn This?

- To learn how magnetic materials become magnets and to explore the differences between permanent and temporary magnets.

Look at the picture. Think and Guess!

- How are the screwdriver and screws getting attracted to each other?
- Is something hidden inside the screwdriver or screw which helps it to do this?



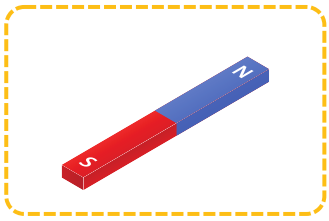
Yes. many of you might say there's a magnet involved.

Do you know that you can also make a magnet which acts like the screwdriver? How?

Let's find out by turning something into a magnet ourselves?

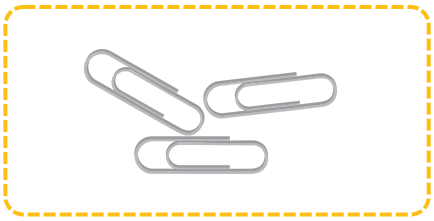
Let's Try: Making Our Own Magnet!

You Will Need:



A bar magnet

A steel needle (not plastic-coated)

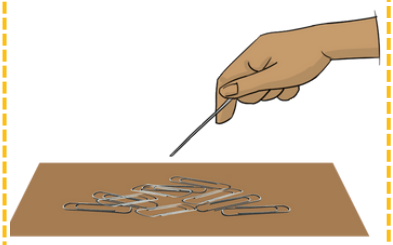


A few paper clips

Make Your Own Magnet

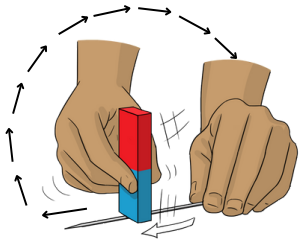
What to Do:

1



Bring the needle close to the paper clips. Do they stick to the needle?

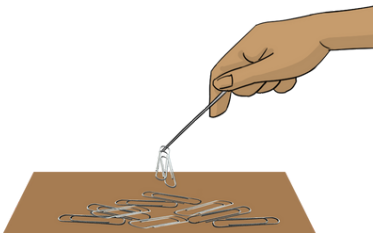
2



Now rub the needle with any one pole of the bar magnet about 10–15 times. Rub in one direction only from the eye to the tip.

(Important: Rubbing in both directions will not work.)

3



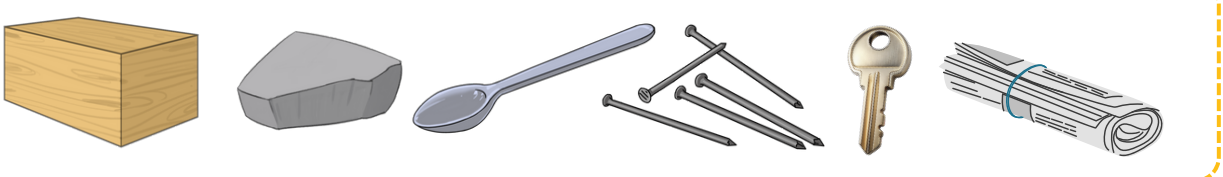
Bring the needle back to the paper clips. What do you observe now?

Yes! The paper clips stick to the needle. Your needle has now become a magnet!

But what other things can you convert into magnets using this method?

Let's investigate it through a simple experiment!

Try the same steps with other objects and record your observations in the table below.



Object	What is it made of?	Magnetic / Non-magnetic material	Did it attract the paper clips? (Yes or No)

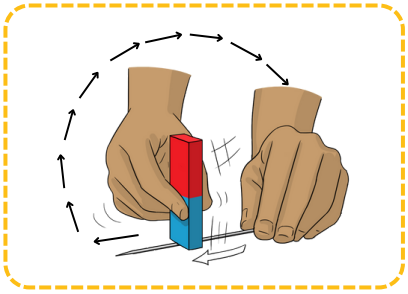
Make Your Own Magnet

Observe, Discuss, and Draw inference

- Which objects became magnets? Which did not? What are those objects made of?

Yes, from the above discussion, we can conclude that - only magnetic materials like Iron, Nickel, Cobalt and some types of steel can become magnets. Non-magnetic materials like wood, plastic, aluminum, rubber etc. cannot.

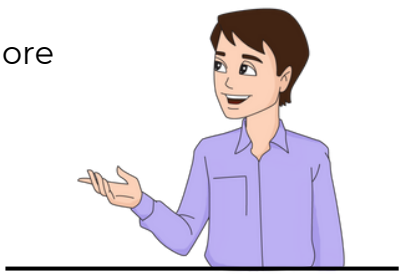
Now, a challenge for you! You have to make a stronger magnet that could lift more clips. What would you do?
Try rubbing the needle more then 10-15 times times and observe how many paper clips it can attract or lift. Record your observations in the table below:



Number of times needle is rubbed	Number of paper clips lifted
10-15	
30-35	
50-55	

Now discuss the following questions in your group:

- What happens when you rub the needle with a magnet more than 10–15 times?
- Why does this happen?



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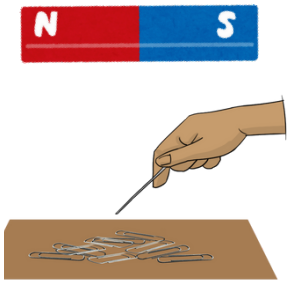
But here's another question: Does the magnet you have made remain a magnet forever? Wait for a few minutes. Or gently drop the needle onto the table four or five times.

- Check again. Do the paper clips still stick?
- Most likely, the needle will have lost its magnetic properties.
- Find out what other methods can be used for demagnetisation, which means removing the magnetic properties of an object.

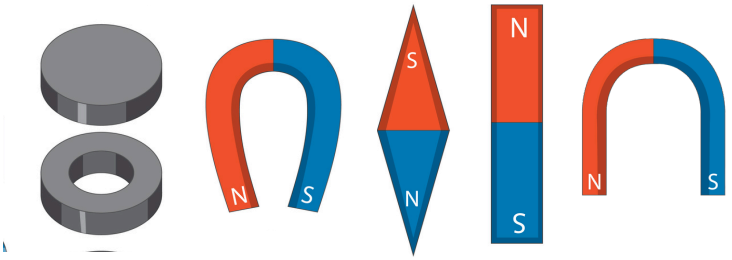
This shows that the magnet you made is not permanent, it is a temporary magnet. We can define these types of magnets:

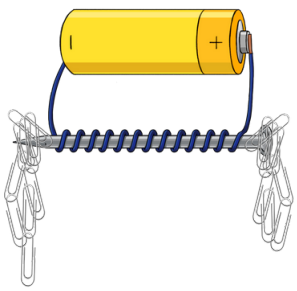
- **Permanent Magnet:** A magnet that retains continues to have its magnetic properties for a long time. E.g. Bar magnet
- **Temporary Magnet**: A magnet that retains its magnetic properties only for a short time. E.g. Magnetised needle or Magnetised iron nail.



Do You Know?

Magnets come in different shapes and sizes, explore more about them with the help of Gen AI tools





Find out:

- Why is it that only magnetic materials turn into magnets and not non-magnetic materials?
- Now that you understand how to make temporary magnets, how do you think permanent magnets are made? Find out!