



How magnets work

HOW TO CREATE YOUR ELEMENTS

STORAGE

For this activity, you must have plenty of different materials in your box. We recommend you use a shoe box (or a box of that size) to store it.

For the second sequence, the first step is an exploratory phase, and the pupils can test things before they get their hands back on the explanation. We recommend you test with different materials, such as:

- Several magnets (with North / South clearly identified on it),
- plates of wood with 1 to 3 different thickness,
- piece of metal (magnetically sensitive)
- piece of aluminum
- piece of plastic
- paper sheet
- ...

CRAFT THE ELEMENTS

A. Storytelling elements

Print pages 1 and 2 of the storytelling elements on 220g A4 paper sheets, and follow the instructions to cut out the pieces and build the magnets as explained on page 2.



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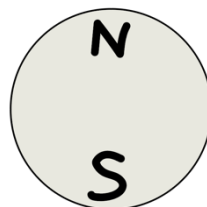
Print pages 3 and 4 of the storytelling elements on A4 paper sheets and use them as support to tell your story. You may also hand the mathematician portraits to your pupils so they can discover who they were in more detail.

Once the storyboard is complete, build the magnet as instructed and attach a paperclip to the figures to make them move with the magnet!

B. Create a magnetic compass

For this element, you will need a big bowl of water, a compass (to draw a circle), an iron needle, a small round of paper, and a magnet.

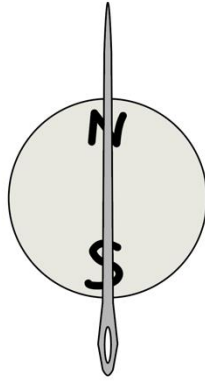
1. Fill the bowl with water. No need to fill it too much; the aim is to have enough water surface.
2. On a paper sheet, draw a 3 cm diameter circle on a paper sheet and cut it.
3. On the paper circle, identify 2 opposite points: on the first, write an N for the North and, on the second, an "S" for the South.



4. Rub one tip of the needle with the magnet.
5. Place the round of paper on the water surface.
6. Place the needle on the paper round with the tip you rubbed on the "N" point.
Be sure that the middle of the needle is placed in the middle of the circle (don't have to be precise, but better to be close).



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7. If you have a commercial magnetic compass or an app on your phone, you can compare the result and show your pupils that the needle is turning to show the North.

POTENTIAL ISSUES

Make sure that you do not spill water on the piece of paper to prevent it from sinking. Place the needle and the piece of paper delicately on the water, or use the alternative method for a more sustainable experiment!

ALTERNATIVES

A. More sustainable magnetic compass

Instead of using a round of paper, you can use a piece of cork!

If you have a sheet of corks, you can cut several rounds in it and glue them together with the iron needle in the middle of the layers.

Then, when you want to perform the activity, you just need to “recharge” the needle by rubbing the “North” tip with a magnet.



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