



Refrigerator Magnets



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Overview

How do refrigerator magnets stick to refrigerators? What's special about these magnets? We'll investigate.

Doing the activity

Try placing the printed sides of the refrigerator magnets together, then try placing the black sides together. What differences do you notice? Next, try sliding the printed sides of the magnets across one another. Now, try sliding the black sides of the magnets across each other, both horizontally and vertically. What do you observe?

Necessary materials:

- 2 refrigerator magnets (from the kit; also feel free to experiment with some of your own!)
- green magnetic view film

What's happening

If you haven't done the *Magnetic Sleuth* activity with the green magnetic view film yet, you may want to check that one out now. It goes a bit deeper into the idea of *magnetic fields*, which can help us understand what's up with refrigerator magnets. Many, many observations of magnetic fields have shown us that all magnets have two *poles*, which we call "north" and "south". The magnetic field sort of scrunches together at the poles, but it does this in opposite ways at the north pole than at the south pole (we say the field goes "out of" a north pole and "into" a south pole). Because of the different field structures at each pole, the north pole of one magnet will be attracted to the south pole of another magnet, but the two north poles will repel each other. The magnetic fields create forces that pull north and south poles together, and the fields also create forces that push north poles away from other north poles (and south poles away from other south poles).

The printed sides of the refrigerator magnets are not magnetized, so they won't experience or exert magnetic forces. However, the black sides are magnetized, and they are magnetized in a very specific way: Their magnetic field structure creates lines of alternating north and south poles. You can observe this using the green magnetic view paper. The alternating poles are responsible for the "buzzing" you feel when you slide the magnets across one another — as you slide the magnets, you move a south pole close to a north (attractive force), then close to a south (repulsive force), then another north... Additionally, this magnetic field is very strong close to the magnet (which is good for sticking to refrigerators), but its strength drops off quickly with distance, so it's not going to be pulling forks out of your hand while you're trying to eat dinner.

Summing up

Refrigerator magnets have a special magnetic field that lets them do their one job quite well!

For more information

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