

Name \_\_\_\_\_

# MAGNETIC FIELDS

**Directions:** Read the information below.

A magician waves his wand over a card and the card rises up to reach the wand. Then the magician brings forth a second wand and lays the card back down on the table. This time he says the magic words, waves his wand over the card, and it moves away from the wand, traveling across the table. No strings are attached and nobody or nothing touched the card – it was seemingly done by magic. Of course, we know there must have been something more to the trick. In reality, the science behind this can be attributed to magnets.

Magnets are seen in many places – including your own refrigerator. Each magnet has two poles: North and South. These poles are on opposite ends of the magnet. If you have ever heard the phrase “opposites attract,” then you already know one of the laws of magnetism. On a magnet, the North pole is attracted to the South pole. This means that when you put a North and South near each other they will stick together.

Repulsion is the opposite of this. In this case, repulsion does not mean something disgusting, it means repelling or moving away from each other. When you put a North side of a magnet near another North side, they move away from each other. They do not need to even touch, the magnetic field that exists between them will cause them to repel. This magnetic field is invisible, but we know it exists through evidence like repulsion.

It is also possible to observe the magnetic field by laying iron filings on a sheet of paper, then putting a magnet under the paper. The iron filings will move themselves around the magnetic field showing where it is strongest (which would be the ends of the magnet).

**Directions:** Answer the questions below.

1. Use the information from the text above to explain why the magician's magic trick worked. Specifically, how did magnets make it possible? Use an illustration to show how the wand and cards likely interacted through magnets.

Part 1	Part 2

2. Cut out the images of the bar magnets below and arrange them in the boxes in a way that will show how they attract and repel each other.

Attraction:	Repulsion:

