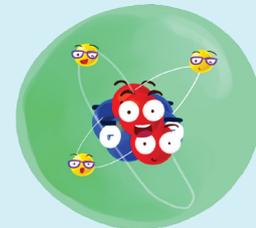


# Opposites Attract



**Grades:** Pre-K–3

**Skills:** Active listening, inference, critical thinking

**Subject:** Atoms, subatomic particles, positive and negative charges

**NGSS:** 3-PS2-3: Forces and Interactions

**Materials:** *My First Science Textbook: Electrons*, magnets (should have a clearly labeled North and South Pole in different colors)

## BACKGROUND

Because protons are positively charged and electrons are negatively charged, these two subatomic particles are constantly attracted to each other. Opposites attract, and two forces that are the same repel each other. If both protons and electrons had the same charge, they would not be attracted to each other, and the atom would not have the structure it has. This phenomenon can be explained using standard magnets, which have a positively charged “North Pole” and a negatively charged “South Pole”.



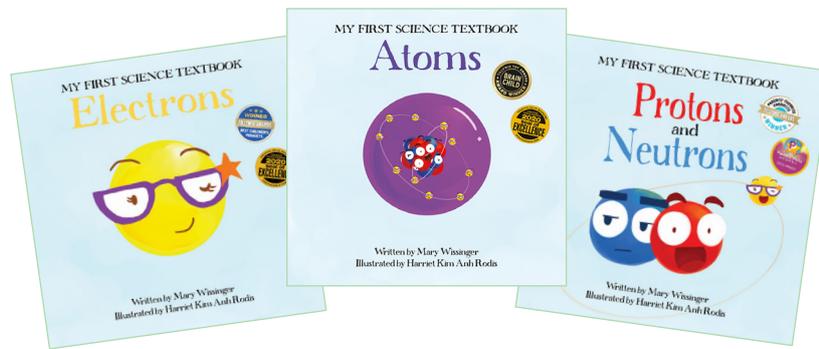
## ACTIVITY

1. For context, show students pages 8 and 9 of *Electrons*. Explain that you are going to investigate why Ellie the Electron is so drawn to Pete the Proton by using magnets.
2. Hand each student a magnet. Ask for a “thumbs-up” if anyone has seen a magnet before and if anyone knows what the two different ends of the magnets represent.
3. Instruct students to hold the “North Pole” of one magnet and the “South Pole” of another magnet near each other. What do they think is happening with the magnets? Can they use adjectives to describe the sensations in their hands?
4. Instruct students to point the “North Pole” end of one magnet to the “North Pole” end of another magnet. What sensations are they experiencing now?



## DISCUSSION

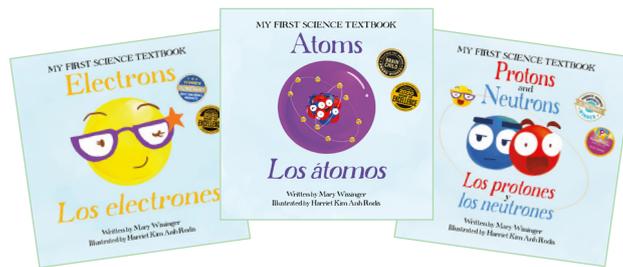
Now that students have an idea of what happens when different types of charges are pointed toward each other, it is time to compare the attraction and repulsion they experienced in the magnets to protons and electrons. Why do students think that they could sometimes make the magnets stick together and sometimes could not? Explain that the “North Pole” of a magnet is negatively charged and the “South Pole” of a magnet is positively charged. How can this observation be related back to Ellie the Electron and Pete the Proton? Through conversation, help students arrive at the conclusion that protons and electrons must have opposite charges for the atom to be held together—“opposites attract.”



This activity is an excerpt from the Teacher's Guide to:  
*My First Science Textbook Series: All About Atoms Book Set*

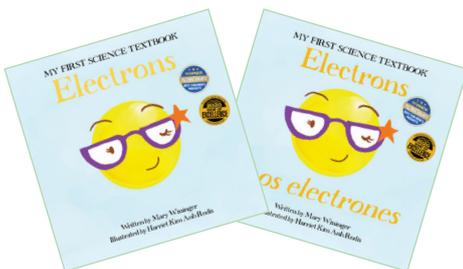
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*Electrons*

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Board book: 978-1-945779-04-6

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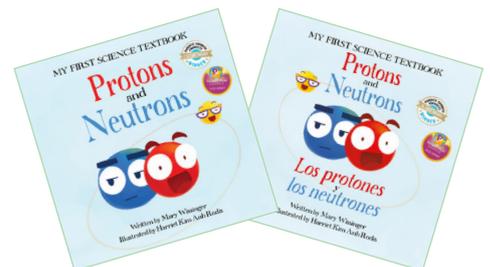
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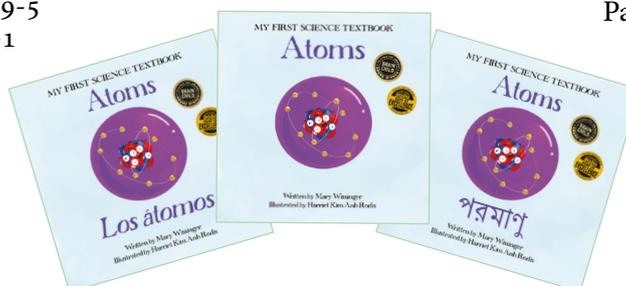
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