

# MAGNET MAGIC OR MAGNET SCIENCE?



## **BENCHMARK and TASK**

**SC.C.1.1.2:** The student knows that there is a relationship between force and motion.

- The student demonstrates that magnets attract and repel each other.

## **KEY QUESTION**

How will ring magnets react to each other?

## **BACKGROUND INFORMATION**

Magnets usually have two poles – north-seeking and south-seeking. Like poles **repel** and unlike poles **attract** each other. Bar magnets have poles at each end. Horseshoe magnets are bar magnets that have been bent into that shape. The poles of ring magnets are on their flat sides which allow us to stack them on a pencil or dowel and observe the repulsion created by like poles. If the force is strong enough, the upper magnet will appear to float above the bottom magnet. This is similar to how the Maglev train is levitated above the track.

## **MATERIALS**

### **Per pair of students**

unsharpened pencil  
4 to 5 ring magnets  
clay (used to anchor the pencil)

## **TEACHING TIP**

Use new, unsharpened pencils for safety reasons.

## **ENGAGE**

1. Have students share the many ways people use magnets at home, school, and at work.
2. Ask: *Now that we know magnets attract and repel each other, what do you think will happen when we put two ring magnets together?*  
Discuss what the children predict.

## **EXPLORE**

1. Give each group a pencil, several ring magnets, and a ball of clay.
2. Show the students how the clay will be used to stand the pencil upright. Allow time for the children to set up their clay and pencil.
3. Tell the students to place the ring magnets on the pencil.
4. Challenge the children to find a way to make their magnets float.

## **EXPLAIN**

1. Allow the students to share what they observed before asking questions.
2. Ask:  
*Why did the magnets attract on one side, but float when turned upside down?*  
*If you did not use a pencil what would happen?*  
*Do the spaces between the magnets change as more ring magnets are added?*  
*What happens when we use bug repellent?*  
*Do the bugs come to the spray?*  
*How is this like a magnet?*  
*What happens when we use ant bait?*  
*Do the ants come to the bait?*  
*How is this like a magnet?*  
*When two magnets attract, is this a push or a pull?*  
*When two magnets repel, is this a push or a pull?*

## **EXTENSIONS**

1. Create a pattern with the magnets – repel, attract, repel, etc.
2. Can you make your magnets bounce?  
Record observations in a student journal.
3. Have students pretend they are magnets and demonstrate attract and repel.

## **ASSESSMENT**

Draw a picture of what happened when you placed the magnets on the pencil.