# Maglev

Grades 3+ | Students Served: 30

ELEMENTARY MIDDLE LEVEL HIGH SCHOOL


## Essential Questions

How do magnets cause motion?

How can magnets improve transportation?

What is the effect of mass and mass distribution on magnetic levitation?

## Career Connections:

- Transportation Engineer
- Subway Driver
- Crane Operator
- Civil Engineer

## STEM Connections

### Science

- Aerodynamic drag
- Magnetism
- Center of mass

### Technology

- Design processes
- Social perspectives
- Friction reduction

### Engineering

- Problem solving
- Modeling
- Technological design

### Math

- Measuring time
- Using formulas
- Proportions

## Sample Activity

### Engineering with Magnets

**Challenge**

Build the maglev vehicle as instructed and test on the Maglev II Track. Then, modify the design to make it faster – adjust the number of magnets, add weight, add a sail, or adjust the height of the track.

**Engineering:** Redesign your maglev vehicle to be operated by a battery and propeller.

Math: Test how fast the maglev vehicle travels at different slopes of the track.

**Art:** Draw a picture representing how a magnetic field looks.

**Geography:** Research whether Earth's magnetic field is stronger in some areas than in others.

**Discussion**

How could we use magnets in the future for transportation? Do you think you could create a plastic magnet?