

A-MAZ-ING MAGNETS

Build a maze and test it out using a magnet to move your car through its twists & turns.

Big Idea

Discover properties of magnets such as attracting (pulling), repelling (pushing), and magnetic field (distance between magnets/magnetic objects).

Standards

NGSS K-PS2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Students will investigate the effects of different strength magnets to pull/push a car in different directions.
NGSS 3-P S2-3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	Students will ask and answer questions about the relationship between the car and the different strength magnets and how it effects the movement of the car.
IELDS 11.A Develop beginning skills in the use of science and engineering practices, such as observing, asking questions, solving problems, and drawing conclusions	Students will observe the magnets, solve the problem of how to move the car through the maze, and draw conclusions about which magnet worked best.

Materials

- Toy cars with magnets taped to them
- Magnet wands/horseshoe magnets (Varying strengths)
- Large foam blocks
- Images of maze examples
- Gutters
- Carpet Squares/other materials to add friction
- Ring magnets with stick to demonstrate

Setup

Have magnet wands and toy cars on table with demonstration magnets. Place blocks, gutters, and carpet squares on floor. Place maze examples on the floor and table for students to reference.

Directions

1. Before building the maze, using the magnets on the table, show magnets attracting (pulling) toward one another, repelling (pushing) away from one

- another, and see how far a magnet can be from another magnet before it starts to attract or repel the other (magnetic field).
2. Show students the cars with magnets and explain that they're going to build a maze to move the magnetic cars through. Students can use the different blocks to build the maze.
 3. Once students have built their maze, encourage them to help the car navigate the new road. (You can also start to add dead ends in which the car needs to be reversed and go a different direction. Or add a different texture to floor with carpet squares/other material.)

Investigation Questions: How did you move your car through the maze? Is there another way you could move the car? How could you make the car go faster through the maze? What happened when you came to a dead end? Which magnet/car worked the best?