

Skills and Strategies

- Planning and Conducting
- Applying and Innovating
- Communicating

Safety

- Use care when handling glass objects to avoid breaking them or being cut.
- Use care when handling any sharp objects.

What You Need

- materials that can charge an object by friction
- objects that can be charged by friction and that will roll, float, or slide easily
- masking tape or other similar tape
- non-latex gloves

The Great Race

Your team will be moving an object along a race track using only attraction and repulsion. The team that gets its object over the finish line first wins.

Question

How can you move an object using only attraction or repulsion?

Procedure

1. As a class, choose an area for a race track. Use tape to mark the starting line and the finishing line.
2. As a team, choose the object that you will be racing. You must be able to make the object roll, float, or slide without touching it or blowing on it, using only attraction and/or repulsion.
3. Select another object that you will use to attract or repel your object to make it move along the track.
4. Rub your objects with different materials to generate charges. Wearing gloves may improve your results. Observe how the charged objects behave when brought close together. Based on these tests, decide how you will charge your objects. Revise your choices as required.
5. When all of the teams have made their choices, carry out your race.



Process, Analyze, and Communicate

1. Make a sketch of the object that your team raced down the track, and the object that attracted or repelled the moving object. Add plus and minus signs to your sketch to show a possible explanation for why your racing object moved.
2. Write a paragraph that explains why you think that the winning team's object won the race. Use the concepts of the law of electric charge in your explanation.
3. What would you do differently if you were planning another race?

Apply and Innovate

4. As a team, design another type of "trick" based on the law of electric charge that you could perform. For example:
 - Could you make an object spin on a platform?
 - Could you design an obstacle course for a rolling, floating, or sliding object?
 - Could you set up a "Charged Circus" with different kinds of acts and feats?

Choose your trick and design a procedure that will obtain your desired result. If there is time, practise and perform your trick.

5. Suggest one application that moving an object by attraction or repulsion might have in industry, in manufacturing, or in a consumer product.

