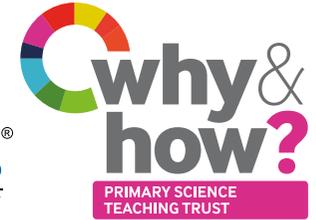




# Mini Hovercrafts

## LINKED CHALLENGE

To build a hovercraft to overcome friction



### ACTIVITY OVERVIEW

\*Before the session, glue the sports bottle tops to the CDs so that they cover the holes in the centres. If possible, the children could complete this with supervision themselves, at the end of the previous session (see Health and Safety warning).

Review the basics of gravity and friction with the children. Challenge them in pairs, to slide their CD across the carpet and compare this to sliding it across the tabletop. How does the CD move each time? Why is it different? What forces are acting on the CD?

**Set the children a challenge:** In pairs, can they use the balloon to reduce the friction acting on the CD as it passes across a surface? The only extra piece of equipment they have is a balloon.

Provide time for pairs to discuss and try out options for solving the problem. Provide tips if the children need them and explore how the air leaving the balloon and travelling through the bottle top, makes the CD travel differently (see below).

Once the children have made and explored their hovercrafts, set up a hovercraft race or obstacle course that each hovercraft can be timed completing. Discuss as a group how each one worked, which one travelled the furthest/fastest and why, giving time to explore the children's ideas.

### KEY FACTS/SCIENCE

All unsupported objects are pulled towards the Earth due to the force of gravity acting between the Earth and the object. When forces on an object are *balanced*, an object will remain stationary or continue to move at a constant speed. When forces are *unbalanced*, an object will change shape, start or stop moving, speed up or slow down. Friction is the force that acts when two surfaces meet. It acts in the opposite direction to any movement of the object and slows down a moving object if the force of friction is greater than that driving the object forward. The rougher the surface, the greater the friction and the more quickly the object will slow down and eventually stop moving.

When a balloon filled with air is attached, the released air is forced through the bottle top and under the CD, creating a thin layer of air. The air creates a cushion and the friction between the air and the CD is less than that between the CD and a solid surface. With lower friction, the CD can move more easily.

### RESOURCES

Glue	Sports bottle tops (one per pair)
Glue gun	Balloon
Old CDs (one per pair)	Timer

#### Health and Safety:

You must undertake a risk assessment before using hot glue guns. You should consider possible latex allergies before using balloons.

### QUESTIONS/FURTHER LEARNING

- What is a hovercraft and how does it work?
- What forces are acting on a hovercraft when it is moving?
- How does a hovercraft move over different surfaces?
- Extension: explore how hovercrafts have been used for transportation:  
<https://www.youtube.com/watch?v=Y8I3aK5A13U>

Online supporting video:

<https://tinyurl.com/ux5u2p2>

