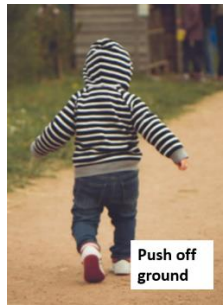


## A Smooth Cruise is the Way to Move

**Forces** are the pushes and pulls in our world. By providing pushes and pulls, forces help to get and keep things moving. As you would expect, it also takes **energy** to provide the forces needed to move stuff. For example, it takes energy from your body to provide the push on your legs needed to walk around. It also takes energy for a bird to fly through the air and a ship to push through the ocean.



While it always takes energy to move things, it helps if we can design things in a way to make them as **energy efficient** as possible. This is especially important for things like cars, trucks, and planes that transport things every day. Energy efficiency depends of many things including an objects weight and its aerodynamics.

Since there are over 1 billion cars in the world today, it is super important to make them as cost-effective as possible. Since lighter cars require less push to move, they are usually more energy efficient. As a result, engineers are always trying to find new **materials** that are stronger but lighter.

The **aerodynamics** of a car depends on how much air the car has to move out of the way as it travels. The more air it has to move, the more **drag**, or resistance, there is to the forward motion of the car. Cars with smooth surfaces and no sharp corners allow the air to flow smoothly over them by keeping the drag as low as possible.



In this **STEM Challenge**, your task is to build an aerodynamic car that can move down a track as smoothly and quickly as possible. The cars will be powered only by the force of gravity that pulls them down the track.