



Learning Objectives - WALT (We are learning to...)

1. Friction
2. Materials and surfaces
3. Weight, gravity, and acceleration

Curriculum links Energy and Forces

- **Science** – Friction, surfaces, weight.
- **Engineering** – How things are built to overcome friction.

What is happening?

Today we are looking at friction. Friction is a force that resists motion, think of it as a force that *slows things down*. The smoother an object it is, the less friction it has. The rougher an object is, the more friction it has!

Friction is the reason you can slip around on wooden floors easily in socks.... but cannot do the same on a carpet. The wooden floor is *smoother* than the carpet, meaning there is less friction, and you slide faster!

Understanding friction is useful for many things. For example, the shoes we wear have rougher soles so that we do not slide all over the pavement. But skis have very smooth bottoms so that you can slide quickly along snow.

Shopping List!

Ramp (plastic sheet, garden slide, etc.)

Stopwatch

Bubble wrap

Towel

Different objects to test (toy cars, Ping pong ball etc.)

Procedure

Make a ramp using an acrylic or metal sheet. (Your garden slide will also work!) Both of these materials are smooth and have low friction so will allow our tester items to slide better.

Get your stopwatch and toy car (or similar). Sit the car at the top of the ramp and time how long it takes for it to travel from the top to the bottom. Make a note of the time and repeat for your different toy cars.

Once you have done this, place the bubble wrap or towel down on the ramp. You will notice these are rougher, meaning they have a higher friction. Predict what you think will happen and then repeat the experiment again. You will notice that the increase in friction has reduced the speed of the car as there is a stronger grip between the toy and ramp!

Try some different materials and test which ones make things slide faster or slower down the ramp!

