

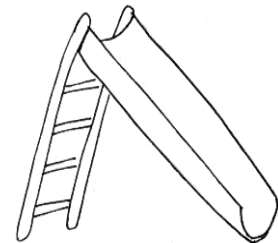


Friction - What would you use to make a really fast slide?

Updated v2

Fact

- Slides usually have a smooth surface and are made out of metal or plastic.
- The steeper the slope the faster you go.
- The less friction you have the faster you go.
- Friction is a stopping force.
- Friction acts to slow things down and even stop them from moving and is caused when things rubbing against each other.
- Lubricants reduce friction by making surfaces slippery so they can move over each other faster.
- I used water and detergent as lubricants, on a plastic sheet, to make a fast slide on a grassy slope.



Do you know?

- Friction is very helpful. If we didn't have friction we could slip every time we tried to walk.
- Rough surfaces cause greater friction than smooth surfaces.
- When the Egyptians were building the pyramids they would have to drag huge blocks of stone long distances. Then they discovered that if they put rollers under the stone blocks they could move them far more easily. The rollers reduced the friction.
- When an object slows down due to friction the energy it loses from movement becomes heat energy. That's what happens when we rub our hands together on a cold day.

Experiments you can do

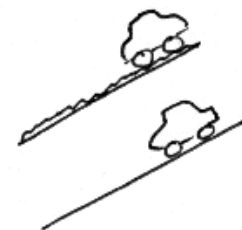
Speed test toy cars.

What you need:

Two identical toy cars
 Strong cardboard like an empty box
 Something to raise one end of the cardboard (like some books)
 Strip of carpet, some rough material like sacking or scrunched newspaper

What you do:

Take the tape off the cardboard box and fold it down so it lies flat. Raise one end of the box, by supporting it with some books, to make a race slope. Race both cars down the cardboard starting them both at the same time. They should both finish at the same time.



Then lay a strip of carpet, rough material, or newspaper (that has been tightly scrunched and then flattened) on the box. Race one car on the box and one on the rough surface. Which surface slows the car down?

Race your cars down the different surfaces to see which one is fastest. What other surfaces can you test?

Racing blocks

What you need:

Wooden or plastic block

Ice cube (leave it in the freezer until just before you need to use it)

What you do:

Push a wooden block across a table or benchtop with a tiny bit of force from your fingertip. How fast does it go?

Take the ice cube out of the freezer and push that across the table or bench top with a tiny bit of force from your fingertip. How fast does it go?

Try the ice cube again, once it's been out of the freezer for a minute or two. Push it across the table or bench top, again, still with only a tiny bit of force from your fingertip. Does it move faster this time? Why?

In the water trail left behind the melting ice block try pushing the wooden block along with the same amount of tiny force. Does that make any difference?

What is the water, from the melted ice doing?

Other Investigations

Try the soapy hand experiment.

What you need:

A screw top container (preferably one that has a smooth lid)

Liquid or bar soap.

What you do:

Screw the lid open with a dry hand. It's pretty easy right?

Now soap up your hand with warm soapy water. Make sure it's really soapy and try unscrewing the lid on the screw top container again. Is it still easy to open?

Make heat energy with friction

This works well on a cold day.

Rub the palms of your cold hands together. Rub them quite fast. What happens to your hands? Do they stay cold? Why not?

The friction you're making, rubbing your hands together, makes heat energy which warms your hands.

Jokes

What doesn't see, or saw or swing but it can take you for a really fast ride? A slide.