

# Investigate the effects of friction.

## Success Criteria

- I can explain the effects of friction on a moving vehicle.
- I can investigate the effects of friction created by different materials.

# Vocabulary

Friction

Brake

Slow

Stop

Wheel

Speed

Rough

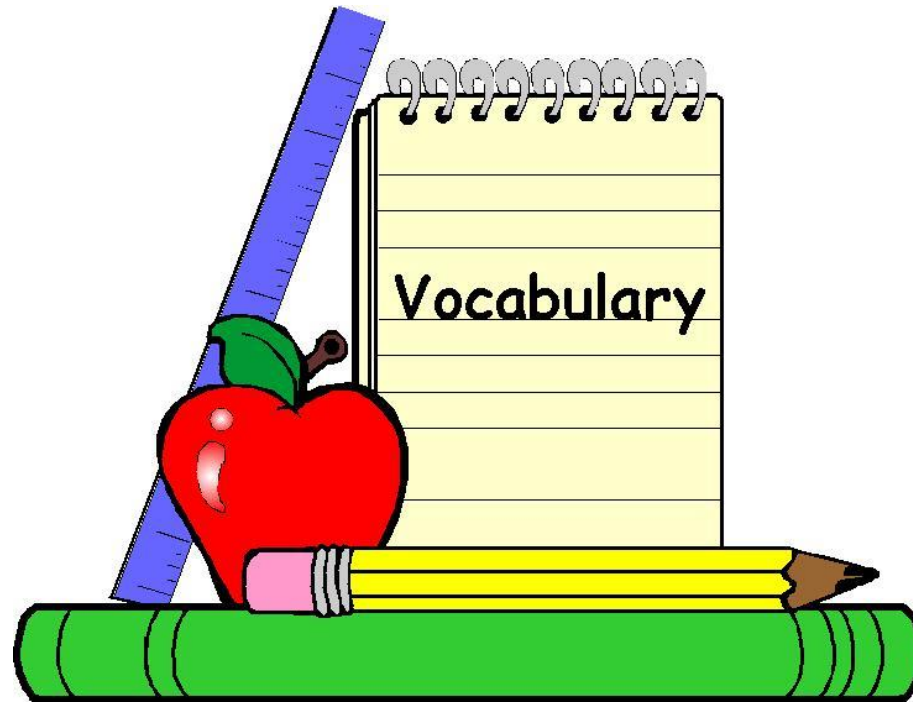
Smooth

Surface

Force

Push

Back



# What Is Friction? True or False

Look at the statements about friction. Can you decide which are true or false?

Friction is a force.

Friction slows moving objects down.

All surfaces create friction on an object moving over them.

Friction is always a useful force.

Friction is stronger than gravity.

Friction produces heat.

The diagram features four children at the bottom: a girl with a pink flower in her hair, a boy in a grey jacket, a girl with glasses, and a boy with his arms crossed. Yellow lines connect the statements to the children: the first statement to the first girl, the second to the first boy, the third to the girl with glasses, the fourth to the second boy, the fifth to the first girl, and the sixth to the second boy.

ANSWERS ...

# What Is Friction?

How did you do?

The diagram features four children at the bottom, each with a yellow line connecting them to a statement above. The statements are arranged in two rows. The first row contains two statements, and the second row contains two statements. The labels 'True' and 'False' are in green and red boxes, respectively.

| Child                                 | Statement   | Label |
|---------------------------------------|---|-------|
| Girl 1 (Pink dress)                   | Friction is a force.  | True  |
| Boy 1 (White jacket)                  | Friction slows moving objects down.                         | True  |
| Girl 2 (Blue and white striped shirt) | All surfaces create friction on an object moving over them. | True  |
| Boy 2 (Green shirt)                   | Friction produces heat.                                     | True  |
| Girl 1                                | Friction is stronger than gravity.                          | False |
| Boy 2                                 | Friction is always a useful force.                          | False |

# What Is Friction?

Friction is a **force** that acts between two surfaces or objects that are moving, or trying to move across each other.

Friction always acts in the **opposite direction** to the moving object, and always **slows** a moving object down.

All surfaces create friction on an object moving across them. Even very smooth surfaces, like ice, create *some* friction.

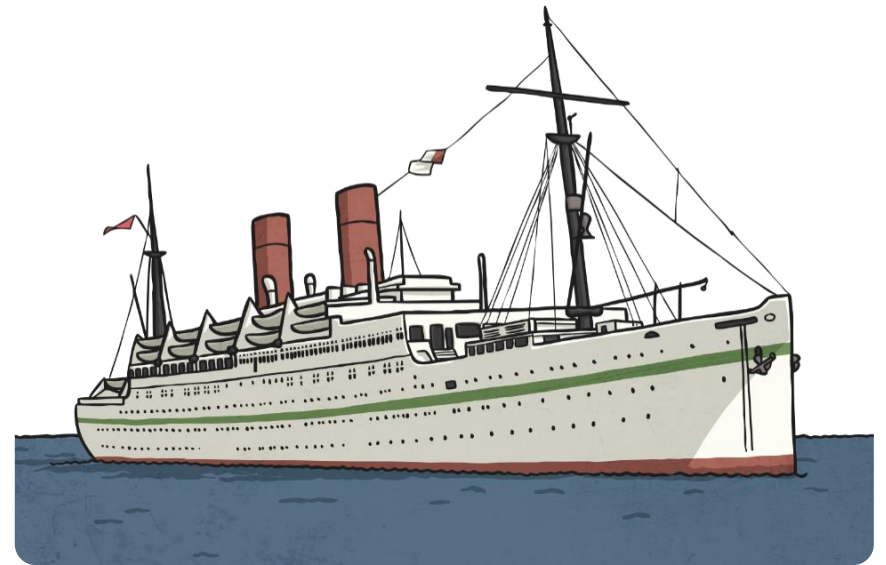


# What Is Friction?

**Air resistance** and **water resistance** are both forms of **friction**. Gases and liquids create friction as well as solids.

Friction can be **useful** – for example, the soles of your shoes create friction with the ground, preventing you from slipping over.

However, friction can be **unhelpful** too – friction on a bike chain can make the bike harder to pedal.



# Friction in Action

Watch [this clip](https://www.bbc.co.uk/bitesize/clips/z462tfr) to see how the force of friction is used to make brakes slow down or stop a moving vehicle.

<https://www.bbc.co.uk/bitesize/clips/z462tfr>

**RSC**

## Friction between the tyre and the road

Part of **Science** | **Friction and resistance**

Duration 01:16



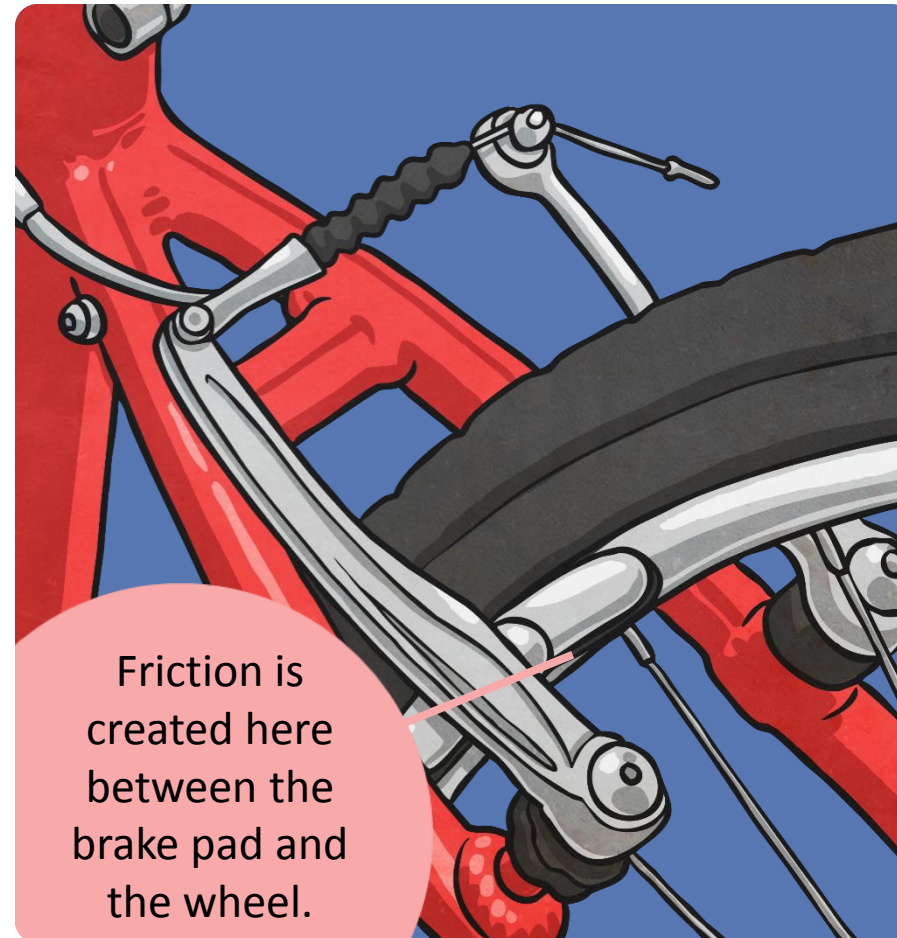
### More Clips

- BBC** Friction on the ski slopes
- BBC** Friction on the ski slopes (signed)
- BBC** How does friction work as a force?

# Friction in Action

The brakes on a bike or car work by creating friction between the brake pad and the wheels.

The friction opposes the movement of the wheels, slowing them down and eventually stopping them.



Watch the video below, read the info and complete the activities:

<https://www.bbc.co.uk/bitesize/topics/zsxxsbk/articles/zxqrdxs>

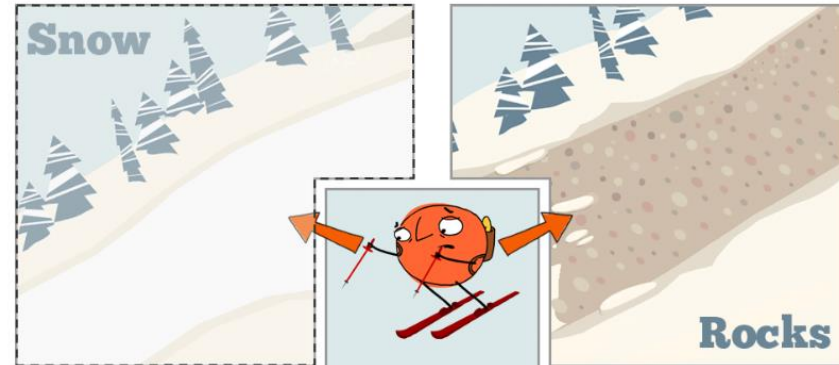
## What is friction?

Part of **Science** | **Friction and resistance**

+ Add to My Bitesize



▶ Place the skier on the surface that produces less friction.



Check ✓

# TASK: Explore the effects of friction

I would like you to complete the two sheets about Friction.

## Sheet 1 – “Box Carts”

- Write some facts you know about friction
- Look at the pictures and Make some predictions e.g. *What do you think would happen to a car on ice?* Don't forget to mention friction in your answers!

## Sheet 2 – “Speed Bumps”

- Draw a picture of two surfaces cause friction.
- Read the examples and circle the level of friction you think would occur (high medium low)
- Answer the questions at the bottom of the page.

# Final Task:

1. Design a race course for a remote control car.
2. Use labels to show the types of surfaces you would use.
3. Label each area to show if it has low, medium or high friction.

