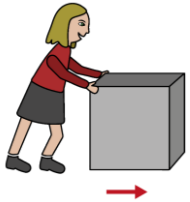
Forces and Motion

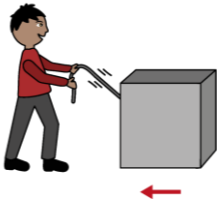
1 What is a force?

A **force** is a **push** or a **pull** between two objects.

Pushes move objects away from you.



Pulls move objects towards you.



2 What can forces do?

A force can:

- Change the **speed** of an object (how fast/slow it moves).
- Change the **direction** an object is moving in.
- Change the **shape** of an object.

3 Using arrows to show forces

We can use arrows to show the forces acting on an object.

- The **length** of the arrow can be changed to show **bigger** and **smaller** forces:

- The **direction** of the force is shown by the arrowhead:

4 Balanced and unbalanced

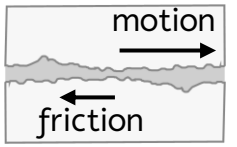
- **Balanced forces** are when opposing (opposite) forces are the **same** size.
- **Unbalanced forces** are when opposing (opposite) forces are **different** sizes.

5 Forces and motion

- **Balanced forces** do **not** cause a change in motion (speed or direction) or shape of an object. When forces are balanced:
  - A stationary (still) object will stay still.
  - A moving object will keep moving at a steady speed.
- **Unbalanced forces** do cause a change in motion or shape of an object. When forces are unbalanced:
  - A stationary object will start moving in the direction of the biggest force.
  - A moving object will change its speed (speed up or slow down)..

6 Friction

Friction is a force that acts when two surfaces slide over each other.



It acts to slow the object down.

The rougher the surfaces, the greater the force of friction.