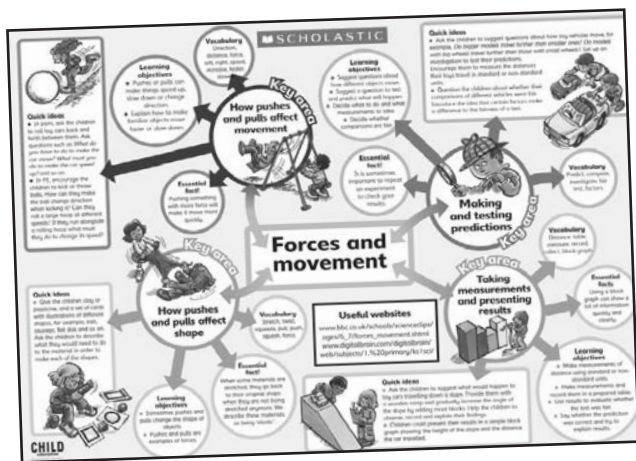


# Forces and movement

Introduce the QCA topic of 'Forces and movement' with these quick and easy science activities



## Whole class

- Tie some string around a sturdy plastic tray. Leave a length of string at one end so that the tray can be pulled along a smooth surface. Then add some weight to the tray, making it more difficult to pull, and ask the children to think of ways to make the tray move more easily. You may need to suggest using rollers, such as wooden dowels or plastic straws. Investigate how using the rollers makes it easier to move the heavy tray. If different types of rollers are used, can the children explain which worked best and why?

- Tell the class that you are going to

investigate the 'stretchiness' of different elastic bands. At the front of the classroom, thread different sizes of elastic bands over a piece of dowelling so that they can be held in place firmly and safely. Hook weights on to the bottom of the band and measure how far they stretch. Apply the same weight to each in turn and record which one stretched the most and least. Ask the children to make predictions before they begin and then compare their predictions with the results. (**Safety note:** Take care not to drop the weights or stretch the bands to an obvious breaking point. It may be necessary for people close to the experiment to wear safety goggles.)

- Link forces and movement to a study of history by looking at how pushes and pulls have been used in industry and farming. Learn how horses used to pull ploughs, carts, carriages and even canal barges before the invention of modern machinery. Find out how water was used to turn water wheels. Can the children think of modern machines that push or pull?

## Group/independent

- Bring in a collection of moving toys for the children to investigate. This could include wind-up, push-along and pull-along toys for all age groups. Next to the collection, have a series of questions to prompt the children's thinking, for example, *Which toy car will travel the furthest or the fastest? How does the wind-up toy work? Which toys need to be pushed or pulled?*
- Give each child a copy of **Toy car test (see photocopiable sheet 4)** and ask them to measure how far a toy car travels (in non-standard units) when it is rolled down a ramp.
- Ask the children to list as many examples as they can of familiar things that require 'pushes' or 'pulls', such as pedals on a bicycle, a scooter, a wheelbarrow and so on. The children could present their ideas in the form of a poster or a simple fact sheet.
- Make cross-curricular links to D&T by giving the children the opportunity to design and build wheeled vehicles. Working in pairs or small groups, design and make a vehicle that will travel the fastest or the furthest. When the vehicles are made, can they suggest ways of testing them that are fair?
- Invite the children to carry out measurements of distance, time and weight (the distinction between weight and mass does not need to be made specific at this stage). They can make their measurements using centimetres and metres, or non-standard units such as book lengths. Record the children's measurements in simple tables and present the results in block graphs. This also offers the opportunity of using ICT and simple data-handling packages.

Activities and poster devised by **Mark Longmore**.

