

# FORCES AND MACHINES

## 1. What are some technological advances for?

Which technological advance allows us to...

...regulate the temperature in our homes?

...send a letter in just a few seconds?

...save water in our homes?

...preserve food for longer?

...have a conversation at a distance?



## 2. Complete the text with the correct words.

Forces can make objects change  or break. They can also make them start or stop moving, or change speed or

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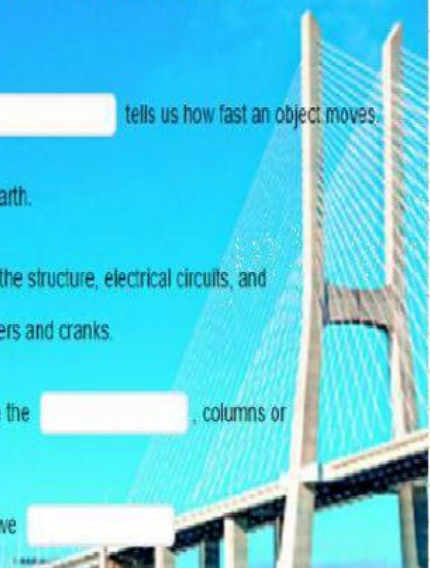
and resistance are  that slow down moving objects.  tells us how fast an object moves.

is the force which  all objects towards the centre of the Earth.

save us time and effort. Machines have some parts in common, for example, the structure, electrical circuits, and  parts. Some of the main operating parts are wheels, , levers and cranks.

Modern  support loads for different purposes. The main parts of structures are the , columns or pillars, beams, arches and cables.

Technological  have changed our homes, our free time activities and the way we .



Friction   Gravity   Speed   Machines   attracts   communicate   shape  
gears   structures   forces   foundations   operating   advances   direction



## Friction in sports

Friction is a force that slows down the movement of an object (or a person) in contact with a surface or another object.

Surface friction affects sports in which an object, such as a ball, wheel or sled, rolls or slides. For example, if you kick a football on grass, friction between the ball and the grass causes the ball to slow down. Friction differs depending on the surface: the smoother the surface, the less friction there is.

Air resistance plays a big role in ball sports or in sports in which a person moves through the air, such as running or cycling, and water resistance affects aquatic sports such as swimming.

In some sports, it is advantageous to decrease friction, for example, in skiing or ice skating. Skis are treated with wax so that they slide faster, and skate blades are sharpened to reduce friction. In other sports, it is better to increase friction. For example, in football, players wear shoes with studs, and goalkeepers wear special gloves.



### 1 Read the text and answer the questions.

a. When does friction slow down the movement of an object?

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b. Is friction greater on ice or on sand? Why?

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c. Why do skiers wax their skis?

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d. Why do you think goalkeepers wear special gloves?

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