

## Design technology

- 1 Work with a partner. Look at the photos and discuss the questions.
  - 1 What can you see in the photos?
  - 2 Where do people use the items?
  - 3 What do you think each item is made of?
- 2 Quickly read the text. Which of the items in exercise 1 is the text about?

# Furniture design



Think about a typical day. What do you sit on when you watch TV? Where do you eat your dinner? What do you sleep on at night? That's right: a chair, a table and a bed. We use furniture all day, every day. But who designs it? What are the processes?

A lot of domestic furniture is mass-produced, but the design process is the same whether you make 50 or 50,000 chairs. It all starts with the designer, and the idea. In this case, the idea is for an injection-moulded plastic chair.

### 1 Research

The designer looks at existing chairs and thinks about the design. This chair must be comfortable, elegant and cheap.

### 2 Design

The designer thinks about the shape of the chair and the structure. They get inspiration from the world around them, including natural and man-made shapes and patterns. The designer also thinks carefully about ergonomics and comfort, and makes a lot of sketches of the design.

### 3 Computer modelling

The designer uses the measurements and data from the sketches to make a 3D computer image of the chair. The designer can change the computer modelling by changing the data until he or she is happy with the design. The computer can also check that the design works. For example, if the chair isn't strong enough, it can be changed. It's normal to make a lot of changes at this stage.



### 4 Mould

When the designer is happy with the design, it's time to make a mould. The designer sends the data from the computer modelling to the factory where they cut the metal to make a mould of the chair.



### 5 Testing

The designer uses the mould to make a life-size model of the chair. He or she can then use this test chair to check that the design works. The designer usually makes more changes at this stage, for example to make the chair stronger.

### 6 Manufacture

A factory makes the chairs. In injection moulding, a machine melts plastic granules and then puts this liquid plastic into a mould. When the plastic cools, it becomes hard. The result? A comfortable, light and good-looking piece of furniture!

**3 Read the text again. Circle the correct alternative.**

- 1 The design process is more expensive/the same if you make a lot of items.
- 2 An ergonomic chair is comfortable/cheap.
- 3 A designer can/can't make changes to the 3D computer model.
- 4 The mould is made of plastic/metal.
- 5 The designer uses the mould to make a computer model/real model of the chair.
- 6 The plastic for the chairs is hot/cold when it goes into the mould.

**4 Read the sentences and write the correct stage in the process.**

- 1 The factory makes a mould of the chair.  
.....
- 2 The designer checks that the design works in real life.  
.....
- 3 The designer looks at existing designs and other sources of inspiration.  
.....
- 4 The designer puts data into a computer.  
.....
- 5 The designer makes sketches of their ideas.  
.....
- 6 The factory makes many chairs.  
.....

**5 Work with a partner and discuss the questions.**

- 1 Where does the furniture in your home come from? Is it mass produced or hand made?
- 2 How important is it to you that your furniture is:  
a) comfortable, b) cheap, and c) attractive?
- 3 Not only furniture is injection moulded. What other items can you think of that are made this way?

**?? DID YOU KNOW?**

Plastic can be a 'green' and environmentally-friendly material. Many plastic chairs use recycled plastic. It is strong and cheap and it lasts a long time. When the chair breaks, or you don't want it any more, you can recycle it again into a new chair!

**PROJECT**

- 1 Work in groups. Choose one of these mass-produced items.

a leather sofa • a metal chair • a wooden cupboard  
a glass table • a paper lampshade

- 2 Find out information about the design process of the item. Create a flow chart and name the different stages and describe what happens at each stage.
- 3 In your group, prepare a presentation of the design and manufacturing process of your item for the class.

**VOCABULARY FOCUS**

- cool [v]:** to become colder
- data [n]:** information for making calculations
- designer [n]:** someone whose job is to decide how to make things
- domestic [adj]:** related to the home
- elegant [adj]:** attractive and beautiful in a simple way
- ergonomics [n]:** the way that furniture is designed so that it is comfortable and easy to use
- existing [adj]:** something that exists now
- factory [n]:** a building where machines make things
- granule [n]:** a small hard piece of something
- life-size [adj]:** something that is the same size as the real thing
- mass-produced [adj]:** made in large quantities by machines
- measurement [n]:** the exact size of something in numbers
- melt [v]:** to become liquid
- model [n]:** a copy of something
- mould [n]:** a shaped container into which you pour a liquid that becomes solid in the shape of the container
- process [n]:** a series of things that happen and have a result
- shape [n]:** the outer form of something
- sketch [n]:** a drawing
- strong [adj]:** not easily broken, damaged, or destroyed
- structure [n]:** the way in which something is arranged