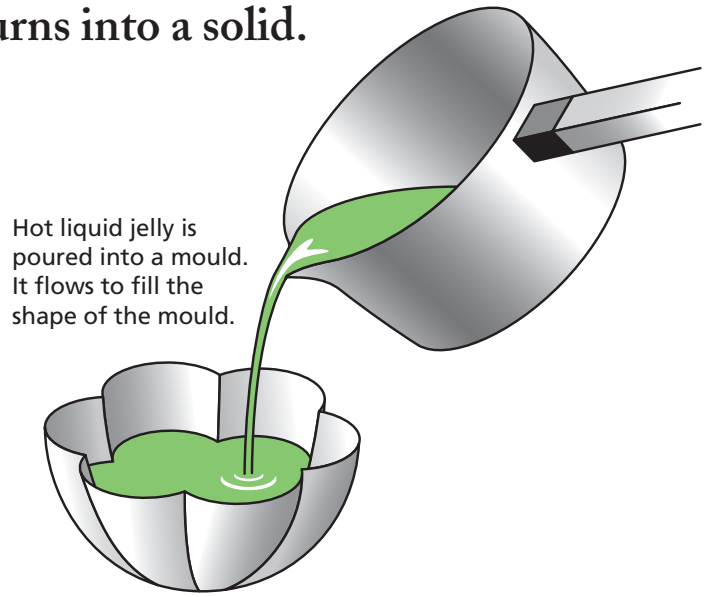
5 Solidifying

When a liquid cools it turns into a solid. We call this solidifying.

(Picture 1) Moulding a jelly.



Hot liquid jelly is poured into a mould. It flows to fill the shape of the mould.

When a liquid cools, it loses heat. Usually (with water being the common exception), the liquid takes up less and less space as it cools. Finally, the particles start to pack together in a regular way. As soon as they do this, the liquid changes to a solid.

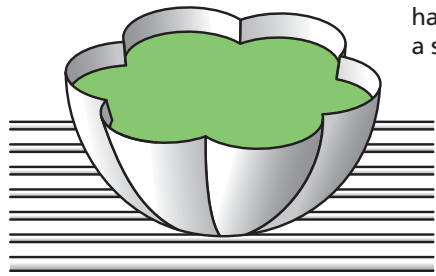
When water cools and changes from a liquid to a solid we call the process freezing. All other liquids 'freeze' and turn into solids as well, but we use the word 'solidify' instead.

Making use of melting and solidifying

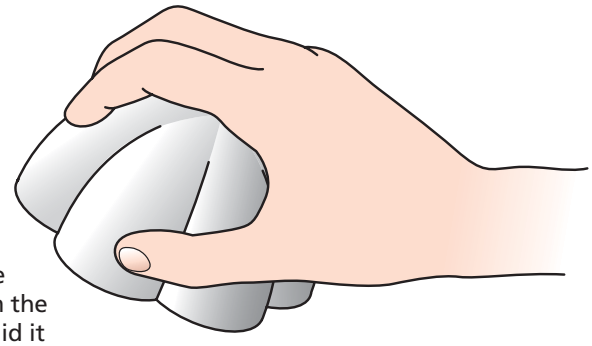
When a solid changes into a liquid, it becomes runnier and can flow. When it cools again, it turns back into a solid. This can be a very useful property.

A jelly mould is a hollow container with a special shape, for example, the shape of an animal. Hot, liquid jelly is poured into the mould and then left to cool. Because it is a liquid, the hot jelly takes on the shape of the mould.

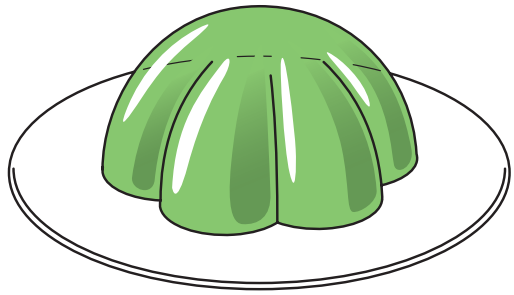
When the jelly has cooled down and turned into a solid, the mould can be turned upside down and the jelly gently shaken out. Because it is now a solid, the jelly will keep its shape (Picture 1).



The jelly is cooled in the fridge until it has set – it becomes a solid.



The jelly can be separated from the mould. As a solid it holds its shape.



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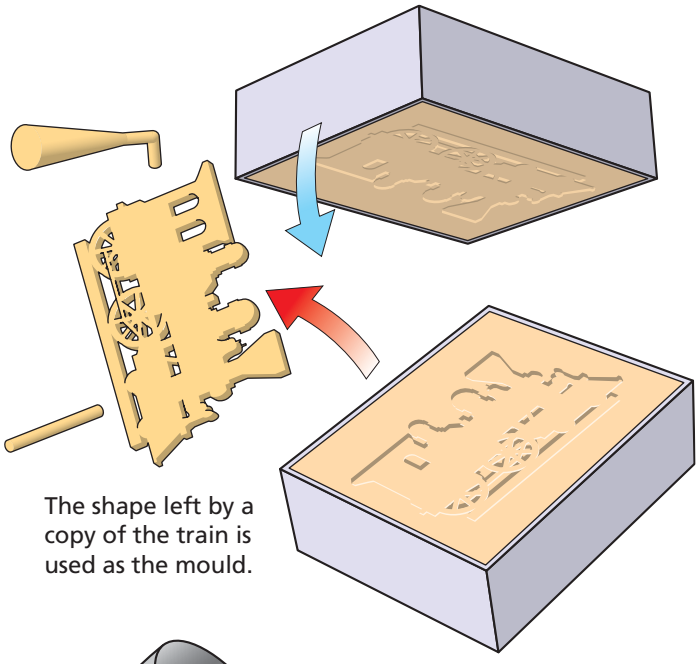
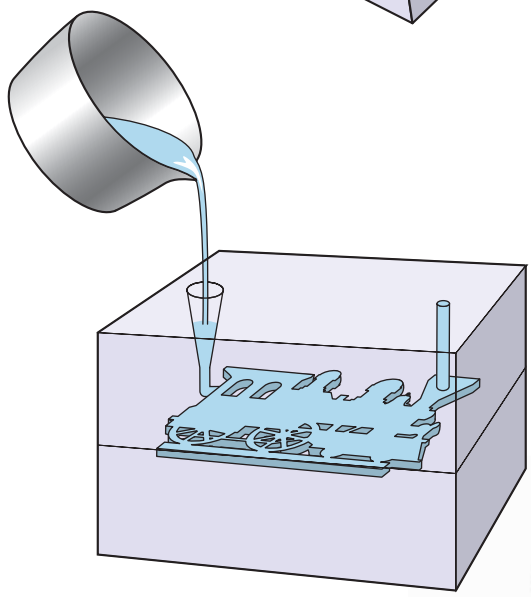
▼ **(Picture 2) When making a cast a liquid is allowed to flow into a mould so it will form the shape of the mould when it solidifies. Even complicated shapes, such as this train, can be made in this way.**



The shape left by a copy of the train is used as the mould.



Molten iron is poured into the mould. When it has cooled and solidified it is removed from the mould. The finished shape is called a casting. In this case it is cast iron.

Casting

The casting process is used to shape many materials. Metals, such as bronze or cast iron, are heated until they are liquid and then poured into moulds to give them special shapes (Picture 2).

Glass bottles are made by placing a lump of molten glass in a mould, then blowing air into the glass. This makes the glass spread out and cover the inside of the mould.

Television screens are made by placing the molten glass in a mould and pressing it until it takes up the shape of the mould.

Plastic is also shaped by moulding. The liquid plastic is poured into a mould and allowed to cool and set to make a plate or bowl.

Summary

- **When a liquid cools, it solidifies.**
- **Substances can be poured into complicated shapes when molten, then allowed to cool into solids for use.**

The train is then painted and used as a door stop.

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