

Science Week 1 Lesson 1 Sheet 1

Year 5

10 Can some changes be reversed?

- Mixing materials can be reversed in other ways.
- Heating and cooling reverse changes of state.

Materials are usually found as solids, liquids or gases. These are called the three states of matter. It can be useful to change a material from one state to another. Changes of state can always be reversed by heating or cooling. Some mixtures can be separated by magnets, evaporation or filtering.

How can changes of state be reversed?

When materials change their state solids become liquids, liquids become gases or solids and gases become liquids. Heating and cooling will reverse changes of state.

The boiling kettle changes liquid water into water vapour. The cold window changes it back into liquid water again.



Scientists give names to changes of state. Liquid to gas is **evaporation**. Gas to liquid is **condensation**.

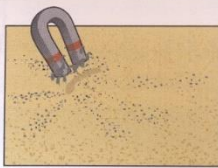
Heating solid chocolate makes it melt into a liquid. Letting it cool changes it back into a solid again.



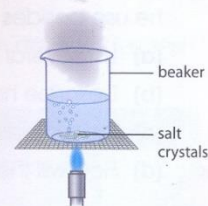
Liquid to solid is **freezing** or **solidifying**. Solid to liquid is **melting**.

How else can changes be reversed?

Sand and water have been mixed. A magnet will reverse the change. It will lift out the iron filings, leaving the sand behind.



Salt has been added to the water. The salt can be dissolved. If you leave it, the water slowly evaporates and leaves the salt crystals behind.



Reversible

Capable of being changed back into its original state.

State of matter

Describes if a material is a solid, liquid or gas.

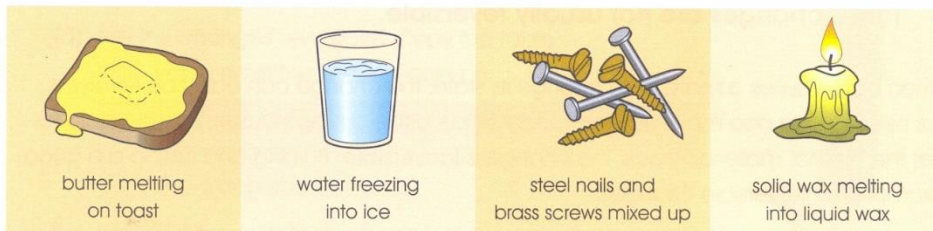
Science Week 1 Lesson 1 Sheet 2

10 Can some changes be reversed?



On track

- 1 Leopard class were asked to think about these four pictures. They each show a change. Each could be easily changed and then changed back.



- (a) Draw out the table below. Fill it in.

What has happened?	How can it be reversed?
Butter has melted on toast.	
The liquid water is freezing solid.	
The steel nails and brass screws have been mixed together.	
The solid wax is melting.	



Aiming higher

- 2 Sam has mixed up some salt and sand. He wants to get them both back again and reverse the change. He adds water to the mixture.



- (a) How could he separate the sand from the salty water?
 (b) What would he then do to get the salt back?



How well am I doing?

On track

I can describe how changes of state can be reversed.

Aiming higher

I can describe a wider range of reversible changes.

Science Week 1 Lesson 2 Sheet 1

Year 5

11 What changes are irreversible?

- Some changes result in new materials being formed.
- These changes are not usually reversible.

When heat causes a material to change its state, the change can easily be reversed. But heating can also make new materials. Once done, it is nearly always impossible to get the original materials back. The change is **irreversible**. Burning and rusting are good examples of irreversible changes.

What can happen when you heat materials?

Heating chocolate makes it melt from a solid into a liquid. If you let it cool down, it turns back into a solid. This is a **reversible** change.



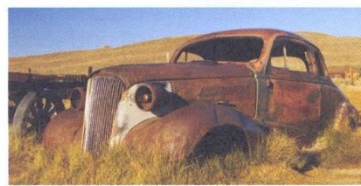
Heating an egg is very different. The eggs change completely. You cannot get the raw egg back. New materials have been made. The change is **irreversible**.



Can burning and rusting be reversed?



When wood burns in the air, smoke and ash are made. You cannot get the wood back again. The change is irreversible. Wood will not burn without air and heat to start the reaction.



The iron in this old car has rusted. Oxygen and water have made a new material with the iron. The iron has been oxidised. The change is irreversible.

Irreversible

A change that cannot easily be reversed to get back the materials you started with.

Oxidised

A material that has combined with oxygen from the air to make a new material.

Science Week 1 Lesson 2 Sheet 2

11 What changes are irreversible?



On track

- 1 Changes happen when the candle is lit. Some wax melts and some burns.

- (a) Are the changes reversible? Copy the table.
Write yes or no in the second column.

Change	Is the change reversible?
The wax melts.	
The wax burns.	



- (b) Which of these statements are true or false? Copy and complete the table.

Statement	True	False
The wax must be heated to melt.		
Burning is a reversible change.		
When a solid melts it changes into a gas.		
Some of the new materials made escape into the air.		



Aiming higher

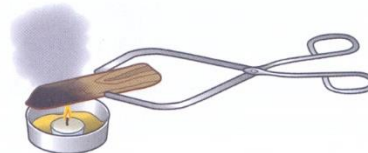
- 2 Mr Hills holds some materials over a candle flame.

- (a) Describe one thing he has done to make the experiment safe.

- (b) Wood and bread burn in the flame.
Are these changes reversible?
How do you know?

- (c) Which of these materials will burn in a candle flame? Which ONE will rust?

cardboard	iron nail	plastic cup	steel spoon	cotton wool
matchstick	pound coin	stone	kitchen foil	gold ring



How well am I doing?

On track

I can explain what an irreversible change is.

Aiming higher

I can name some examples of irreversible changes.