Reversible and Irreversible Changes! Year 6 Science at Home

You can help! Your child is learning about two types of chemical and physical change — ones you can undo and ones you cannot. Your kitchen is full of both kinds!

Why are we learning this? Changes that matter up here

Understanding reversible and irreversible changes is practical knowledge. Knowing that salt dissolves in water but can be reclaimed by evaporation is useful for water management. Understanding that cooking an egg is irreversible helps with food preparation. First Nations peoples have always used both types of change — applying beeswax adhesives (reversible — reheatable) and using fire to harden tools (irreversible — the heat creates a permanent change in the material).

My child will learn to:

✓ Identify reversible changes
Know which changes can be undone — melting, dissolving, bending, freezing.

✓ Identify irreversible changes
Know which changes cannot be undone and create a new substance — cooking, burning, rusting.

✓ Explain the difference
Describe what makes a change reversible or irreversible.

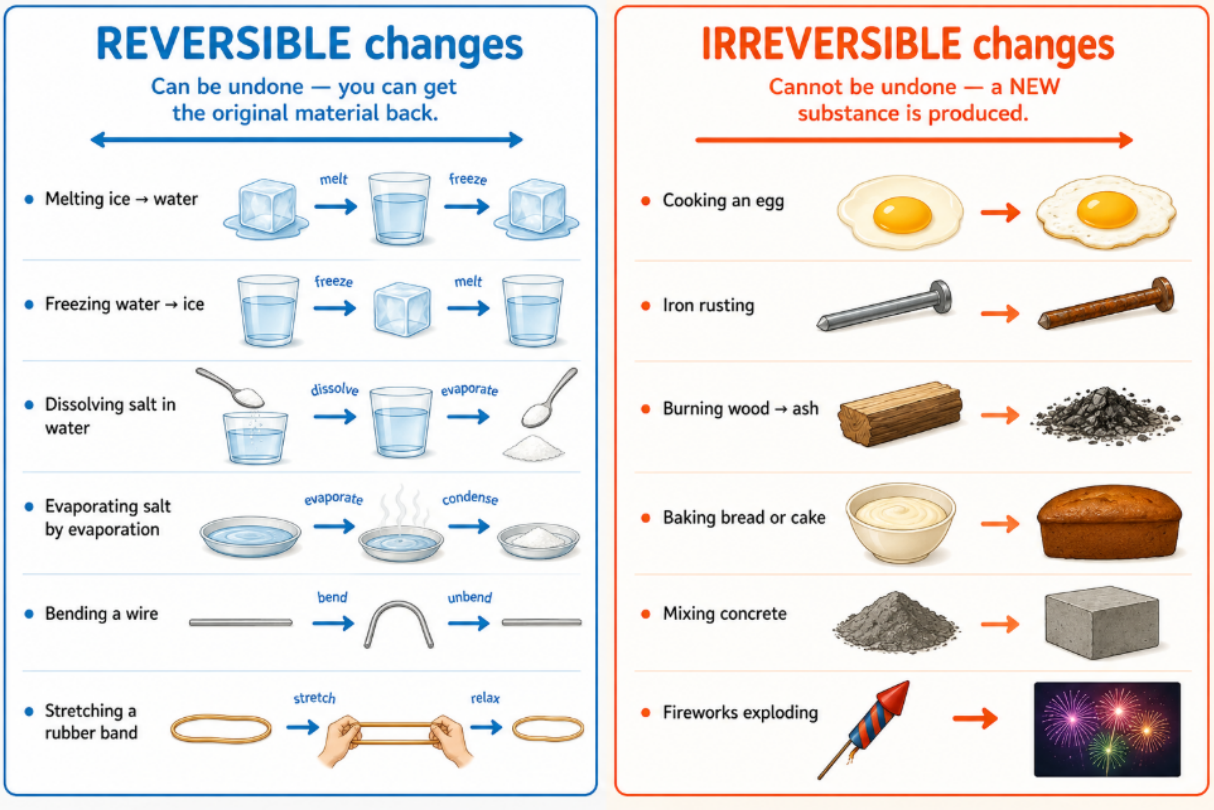
✓ Give everyday examples
List everyday examples of both types of change from home and community life.

Big ideas to know:

Reversible changes
In a reversible change, the original material can be recovered. Melting wax can be solidified again. Salt dissolved in water can be evaporated to leave the salt behind. The substance is the SAME — just its state or form has changed.

Irreversible changes
In an irreversible change, a NEW substance is created. You cannot get the original materials back. A cooked egg cannot be uncooked. Rust cannot easily be turned back into iron. Burnt wood becomes ash and gases.

How to tell the difference
The key question is: "Is there a new substance?" If yes — irreversible. If the original substance can be recovered — reversible.



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Reversible vs irreversible — comparing examples

Example	Type	Why?
Ice melting to water	Reversible	Water can be refrozen to get ice back — same substance, different state
Salt dissolving in water	Reversible	Boil the water away — the salt is still there, you can recover it
Bending wire	Reversible	The wire is still wire — just a different shape. Bend it back.
Cooking an egg	Irreversible	The proteins change permanently — you cannot uncook an egg!
Iron rusting	Irreversible	Iron + oxygen makes iron oxide (rust). A new substance is formed.
Burning wood	Irreversible	Wood + oxygen makes ash + carbon dioxide gas. New substances formed.
Making bread	Irreversible	Flour + eggs + heat makes bread. You cannot get the flour and eggs back!

Think Like a Scientist — Change Investigator

Do these three things in the kitchen together: 1. Dissolve a teaspoon of salt in water. 2. Melt some butter. 3. Cook a piece of bread in the toaster. For each one: is it reversible or irreversible? How do you know?

Ask: "Could we get the original material back? Has a new substance been made? How is the toasted bread different from the bread before — could we undo that change?"

Changes to investigate:

1. Dissolve salt in water — is the salt still there? How could you get it back?
2. Melt an ice cube — then put the water back in the freezer. Does it become ice again?
3. Tear a piece of paper — can you undo that? Is it still paper?
4. Cook an egg — can you uncook it? What has changed?
5. Leave an iron nail outside in water for a week — what happens? Can you reverse it?

Questions to ask your child

1. Is that change reversible or irreversible? How do you know?
2. Has a new substance been created? That is the key question!
3. Can you give me two reversible changes we can do in our kitchen right now?
4. What happens when we cook food? Why can't we uncook it?
5. Why does rusting take so long but burning is fast — even though both are irreversible?
6. How do First Nations peoples use reversible changes when working with materials like beeswax?
7. Why is it important to know if a change is reversible before you do it?

The kitchen is the best chemistry lab at home! Dissolving, melting, cooking and burning are all examples of chemical and physical change. Talk about each one: "Could we undo that? Has a new substance been made?"

Key words to know:

Reversible change	A change where the original substance can be recovered — melting, dissolving, freezing
Irreversible change	A change where a new substance is formed and the original cannot be recovered — cooking, burning, rusting
Dissolving	When a solid mixes into a liquid and seems to disappear — but it is still there!
Evaporation	When a liquid turns to gas — useful for recovering dissolved substances
Rusting	An irreversible change where iron reacts with oxygen and water to form rust (iron oxide)
New substance	When an irreversible change occurs, a new substance with different properties is created
Substance	A type of matter with specific properties — salt and water are two different substances

Key words to look up

Reversible · Irreversible · Dissolving · Evaporation · Rusting · New substance · Substance

What school will check

Your child needs to compare reversible changes (dissolving, changes of state) with irreversible changes (cooking, rusting) that produce new substances.

Try it at home!

Stir a teaspoon of salt into a cup of water. The salt has dissolved — a reversible change! Now leave the cup in the sun for a few days and watch what happens as the water evaporates. Can you get the salt back?