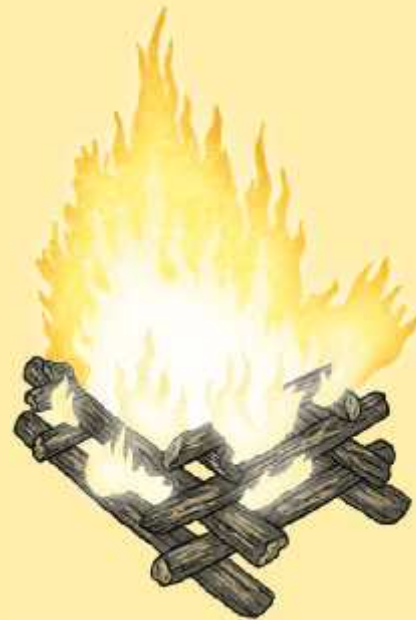


# Heating and Cooling

# Heating

Heating means to raise the temperature of a material.

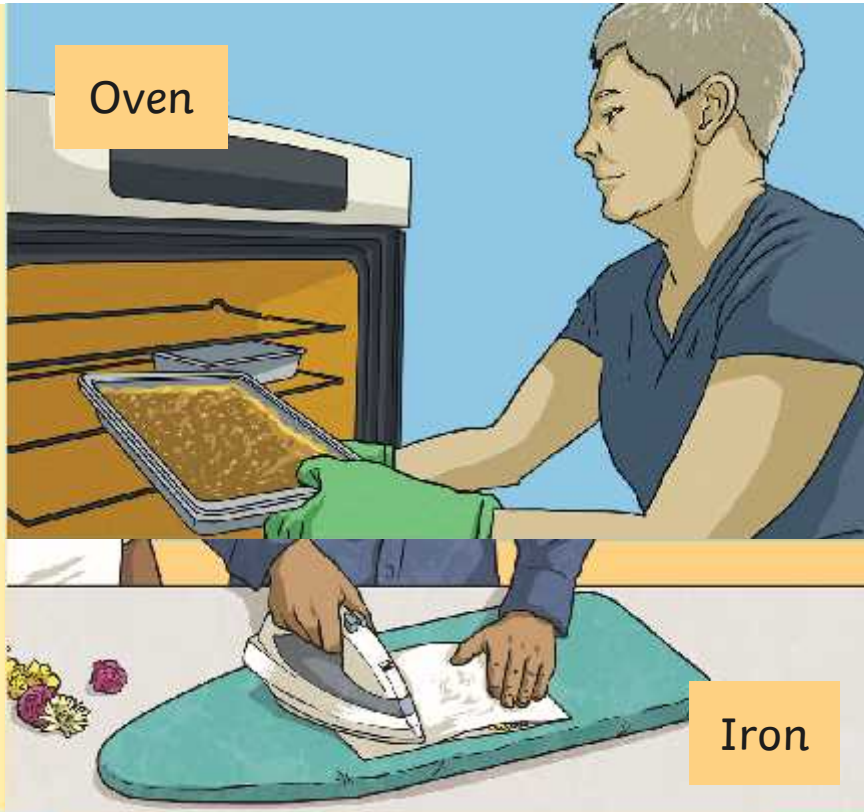
People use heat everyday in different ways. We heat or cook our food to eat it. We apply heat to our clothes by ironing them to take out the creases. We heat our houses in different ways to keep warm. We heat our drinks like tea or coffee to make them enjoyable.







Fire



Oven

Iron

Hob/Cooker



Kettle

Microwave

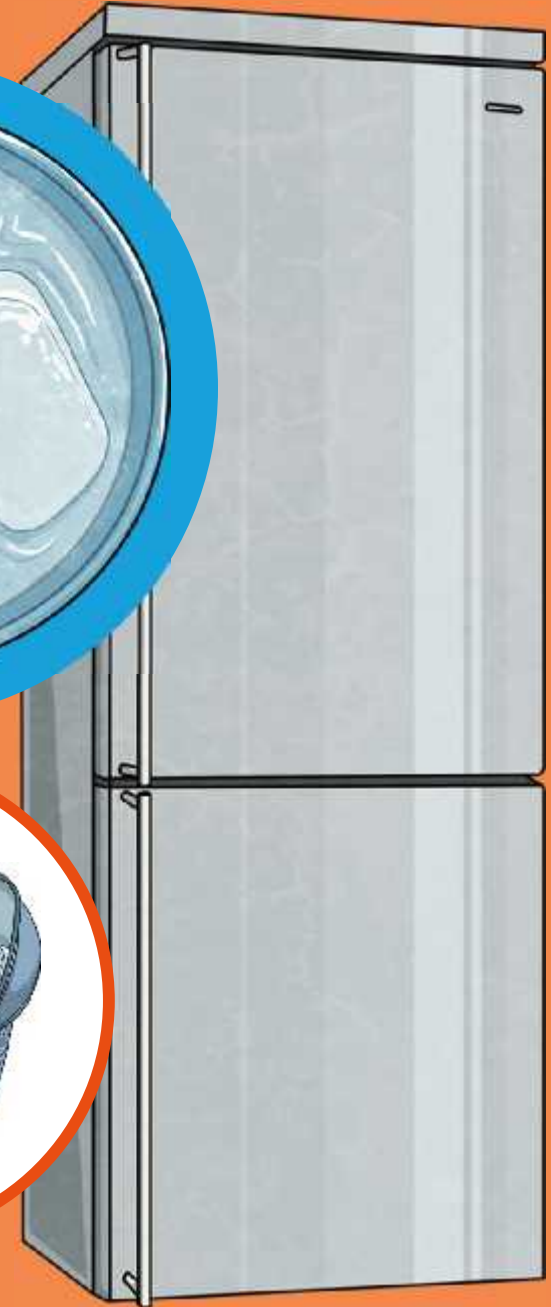
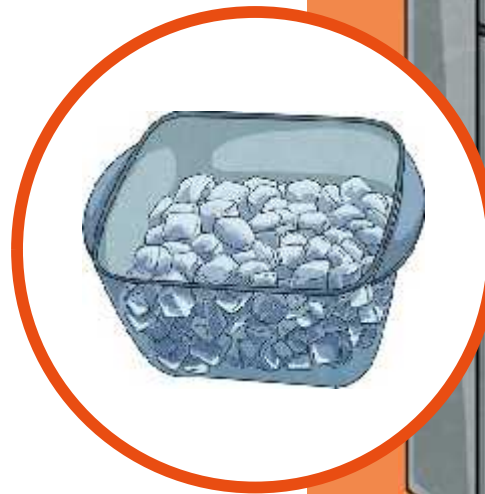


Can You Think of Examples of Heating?

# Cooling

Cooling means to lower the temperature of a material.

There are many different ways to cool down materials. We can cool down different foods in a fridge and freezer. The weather cools our body down when the temperature is low outside. In hot countries, they use an air conditioning appliances to cool down their houses. We use ice in our drinks to cool them down and make them more enjoyable especially in the summertime.

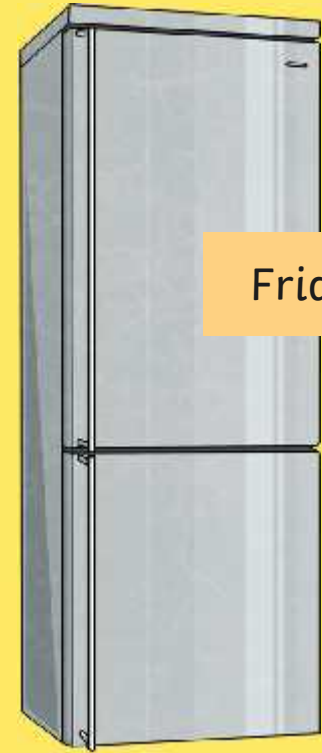


Ice



Air conditioning  
appliance

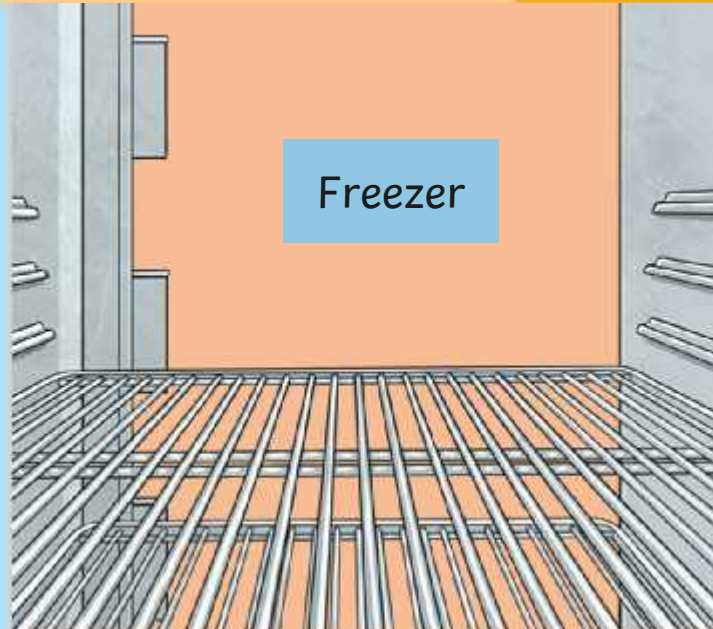
Fridge



Weather- cold air



Freezer



Can You  
Think of some  
Examples of  
Cooling?

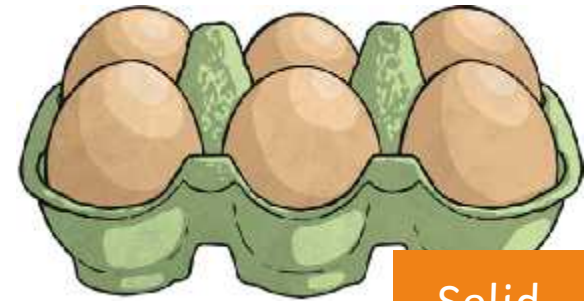


# Changes That Happen to Materials

When heating or cooling different materials it can change their state of matter.

There are three physical states of matter :

The changes to some materials can be **reversible** and **non-reversible**.

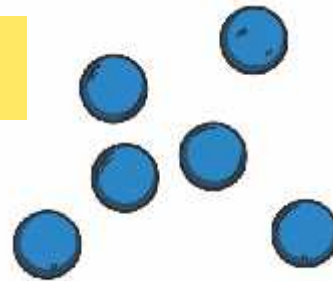


Solid



Liquid

Gas



# Reversible Changes

Reversible changes are changes that can be undone.

For example, when melting chocolate on the hob or cooker the chocolate changes from a solid to a liquid. When the chocolate is cooled it changes back into its solid state.

Can you think of any other reversible changes?



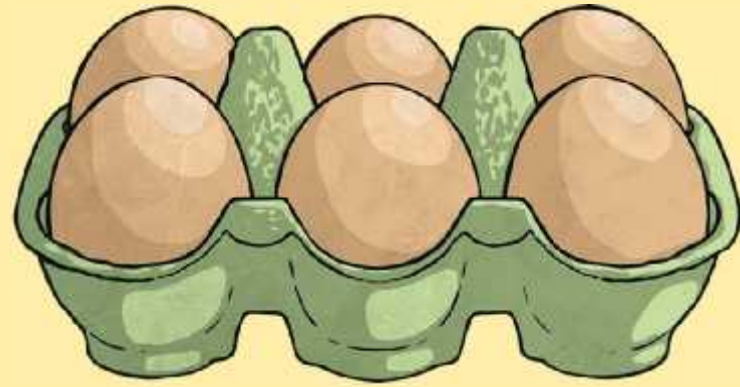
twinkl.com

# Non-reversible Changes

Non-reversible changes are changes that cannot be undone.

For example when you fry an egg on a pan it changes from a liquid to a solid. This change cannot be undone. You cannot change the egg back to its liquid state after you apply heat to it.

Can you think of any other non-reversible changes?





# The Effects of Water When Heated

Water is in a liquid state. The process of heating water is called **boiling**. When water reaches  $100^{\circ}\text{C}$  ( $212^{\circ}\text{F}$ ) it is called boiling point. There are many ways in which we can heat water. Here are some examples:

Kettle



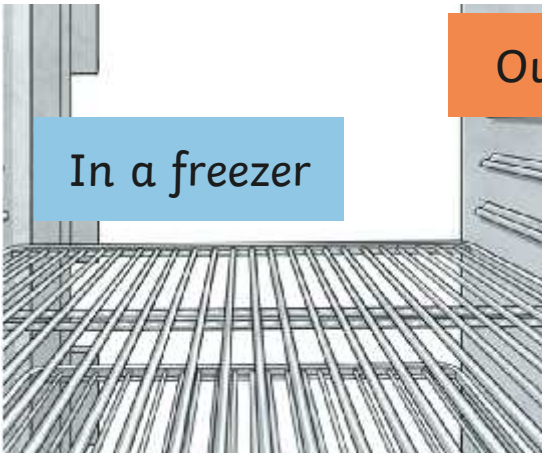
Hob/Cooker



# The Effects of Water When Cooled

When water is cooled below a certain temperature it is called **freezing**. If we cool water down to  $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ ) it begins to freeze and form ice. This is called freezing point. There are many different ways to cool water. Here are some examples:

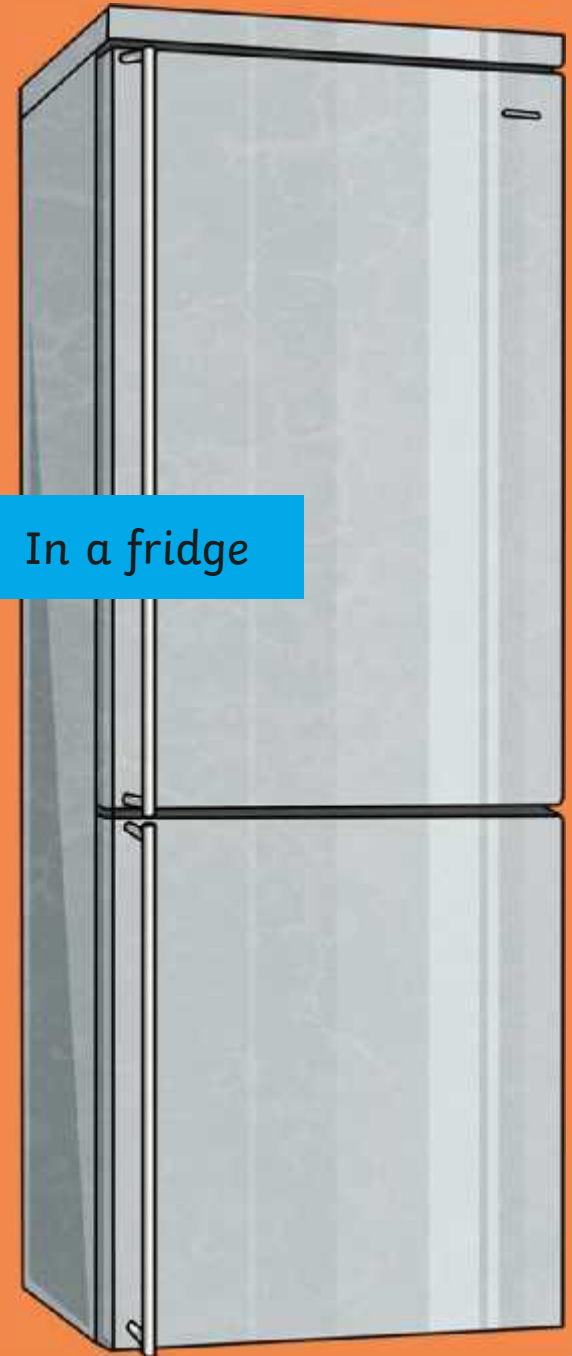
In a freezer



Outside in cold weather



In a fridge



# Discuss What Might Happen to These Materials When Heated



Wood

Butter



Marshmallow



Water



Clothes



# Discuss What Might Happen to These Materials When Cooled

Ice Cream

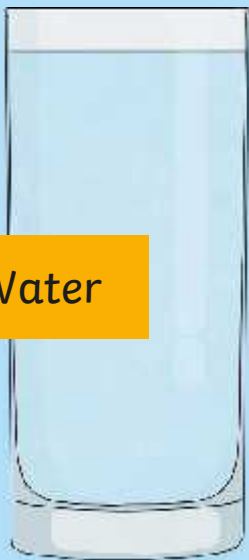


FROZEN PEAS



Peas

Water



Jelly



Ice



