Science for families

Chemical sciences

Marvellous melting

Yrs 3 - 4

At least 20 minutes

Items that are safe and suitable for melting

Medium to high level of supervison

Indoors

Internet and camera access are *optional*

Preparation

- Print/ copy the task sheet *OR*
- Create a copy on A4 paper or in a scrapbook

Purpose

- Explore objects that have changed shape due to melting

Description

1. Students observe different items around the home that have melted, for example a candle, butter in a pan, a piece of chocolate held between a person's fingers.
2. Using the *'Marvellous melting'* task sheet, students record the name of the item that melted, and their thoughts about why it melted.
3. Students draw labelled diagrams to show what the item looked like before and after it melted.

Freezing and melting

When a material changes from the solid state to the liquid state, it is called 'melting'. When it changes from the liquid state to the solid state it is called 'freezing'. For each material there is a specific temperature at which this change of state occurs. This is called the 'melting point' or 'freezing point' of the material depending on which way the state of matter is changing. The temperature of the freezing and melting point for a pure substance is identical. For water it is 0°C (at sea level atmospheric pressure). We therefore associate 'freezing' with low temperatures since this is the most common change of state that we observe in our everyday lives.

Iron has a very high melting point of 1 530°C and will therefore 'freeze' (change from liquid to solid) at temperatures below 1 530°C.

EXAMPLE:
An introduction to freezing and melting for *parent use.*

PrimaryConnections® Australian Academy of Science

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Before the task

- Introduce the terms 'melt' and 'freeze' and ask students what they think they know about them. You might ask questions such as:
  - What things have you seen melting/freezing?
  - Why do things melt/freeze?
  - What is happening when things melt/freeze?
  - When do you/don't you want things to melt/freeze?
  - Do you have any questions about melting and freezing?
- Predict the places in the home where students might find the most things that melt and why the might be found there. For example, in the home, most melting takes place in the kitchen, as the majority of melted items in the home would be related to food.
- Discuss the predictions and plan which items could be included for the *'Marvellous melting'* activity.
- Organise students to complete the *'Marvellous melting'* task sheet.

After the task

- Discuss each of the items that students observed. Ask questions such as:
  - Why do you think the *<insert name of object>* melted?
  - Where did the heat that melted it come from?
  - Do you think you could return it to its original state? Why or why not? How would you do so?
  - Do you think some objects melt more easily than others?
  - Do you think all objects can melt?
  - If you held some chocolate in your hand, would it melt? How long would it take? What might influence the time it took to melt?
- - If you held a metal spoon in your hand would it melt? Why or why not? How could you make it melt?
- Support students to record their thoughts and ideas as notes and labelled diagrams.
- You might like to share the results of your melting investigation with others (classmates, teacher, family members).

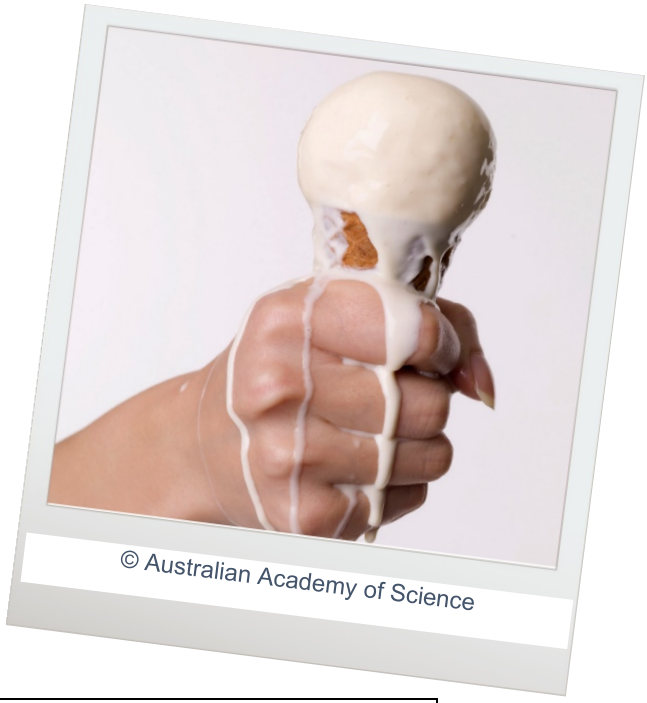
Explore some more

- Read about glaciers and sea ice melting: https://www.worldwildlife.org/pages/why-are-glaciers-and-sea-ice-melting
- Find out why planets closest to the sun don't melt: https://education.abc.net.au/newsandarticles/blog/-/b/2614197/curious-kids-why-dont-the-planets-closest-to-the-sun-melt-or-burn-up
- Find out why lava doesn't melt the side of volcanoes: https://education.abc.net.au/newsandarticles/blog/-/b/2784099/curious-kids-why-doesnt-lava-melt-the-side-of-volcanoes
- Find out how ice causes salt to melt and make yummy ice cream using simple ingredients: https://www.stevespanglerscience.com/lab/experiments/homemade-ice-cream-sick-science/

SAFETY

Students must always be supervised around sources of heat, including when using hot water, stoves and microwaves. Melted object may become extremely hot and can cause burns if students are not adequately supervised.

Information note for families



The ‘Marvellous melting’ project

This task explores how a change of state between solid and liquid can be caused by adding or removing heat.

In this investigation, students think about when melting is commonly seen in the home.

Tasks to do

Each student will have a ‘Marvellous melting’ folder or journal to record information, including a sheet for drawing and writing about when melting was observed in the home. Students are asked to record what melted and the reasons why it melted, such as:

What melted?	Why did it melt?
butter	The pan was hot when we cooked the eggs.
butter	My toast was warm when I put the butter on it.
ice cubes	My drink was warm.
candle	It melted when we lit it. The flame was hot.

Students are encouraged to take photographs if possible.

Note: Students might like to investigate the melting properties of specific items. Consider which items will melt with a minimal amount of heat. Students should always be supervised around heat sources.

Marvellous melting

Name:	Date:

What melted?	Why did it melt?	Labelled diagrams