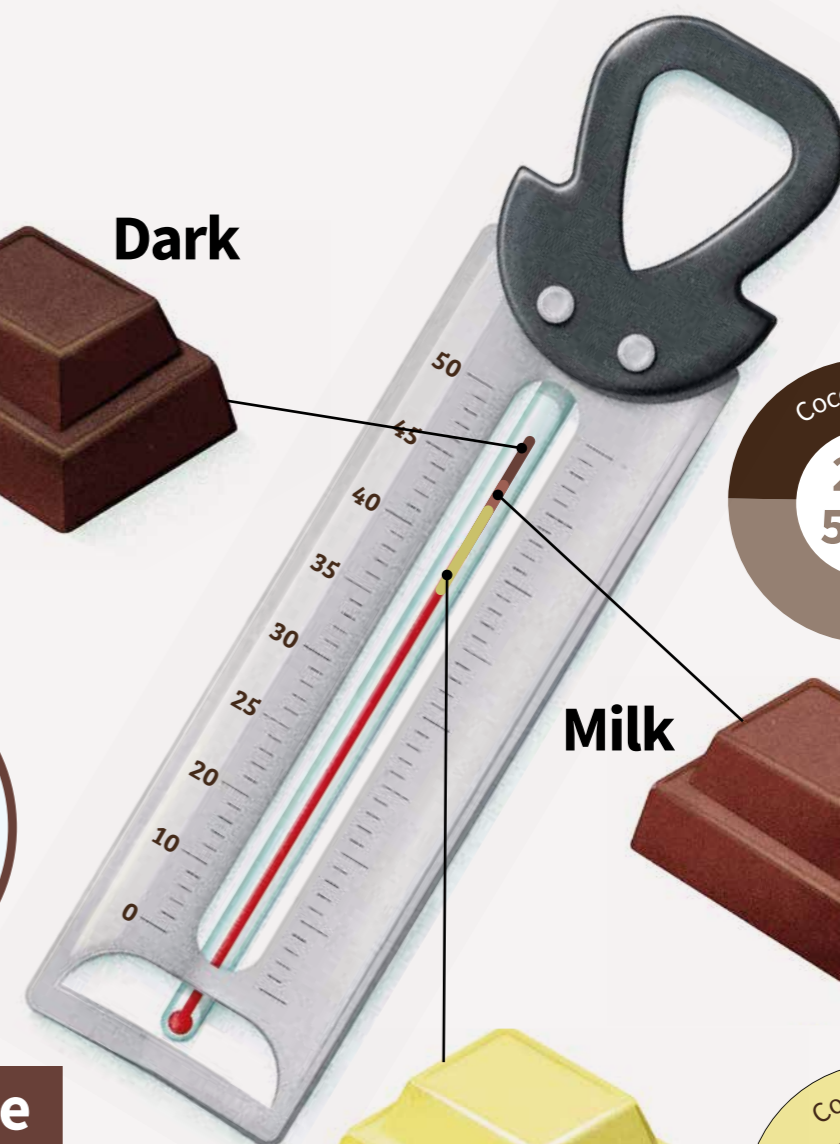
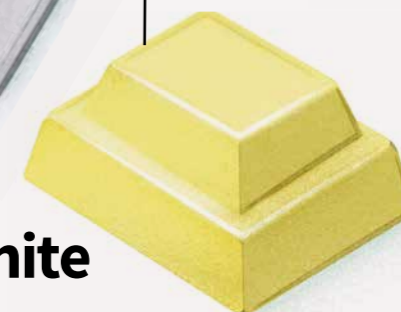
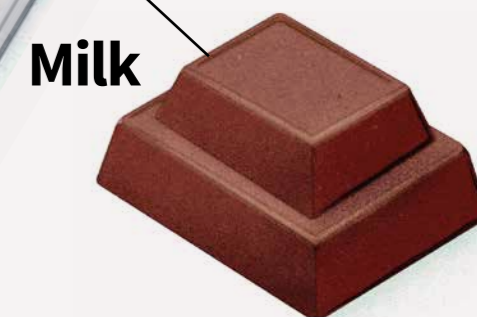
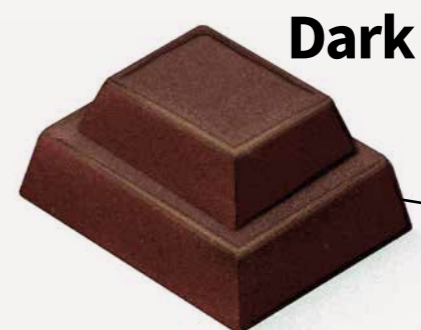
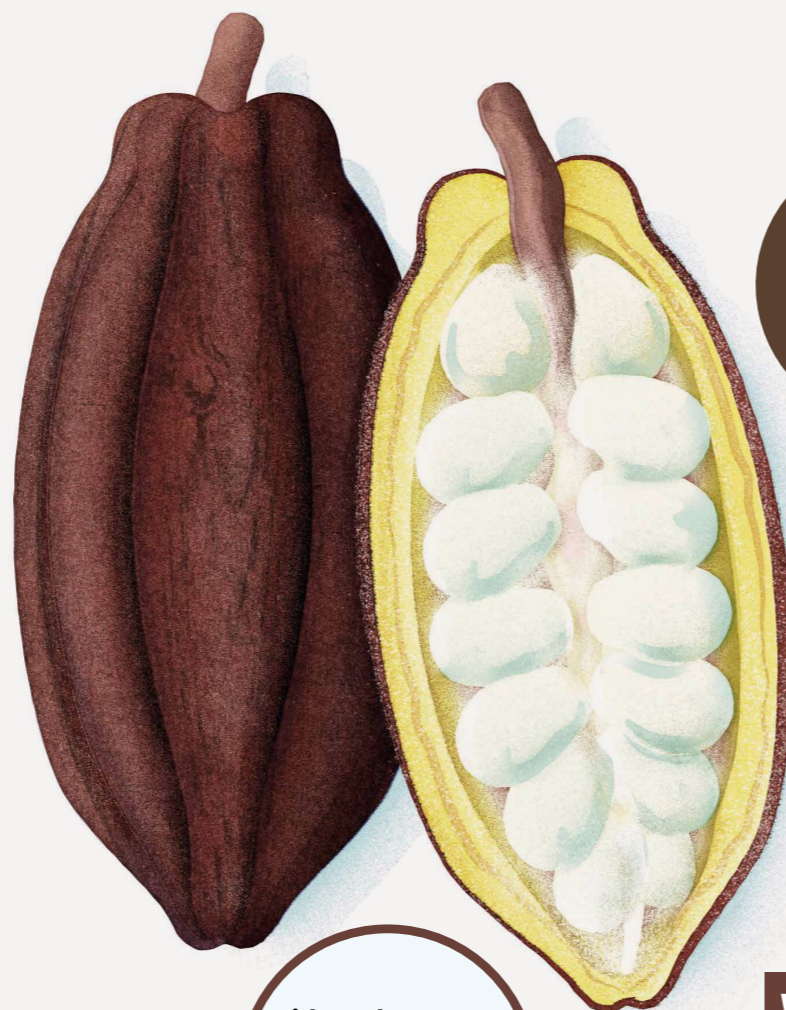


Melting chocolate

Did you know chocolate begins to **melt** at a **temperature** lower than that of the human body? That's why when you put some in your mouth it begins to melt.

So what is the **melting point** of chocolate? There isn't an exact point. There's a **range**, because it's a **mixture**.



Did you know ...?
Different types of chocolate melt over different **temperature ranges**, because they contain different amounts of ingredients.

Did you know ...?
Dark chocolate contains theobromine, which is **toxic for dogs**. So don't give them any!

What is chocolate made from?

- Cocoa** is the simple answer.
- Cocoa comes from the seed pods of cocoa trees.
 - The seed pods contain beans, which are fermented, roasted and processed.
 - Other ingredients, such as **sugar and milk**, are added to make the finished chocolate.
 - The beans from the cocoa tree contain roughly 50% **cocoa butter**, which is **chocolate's main ingredient**.
 - Cocoa butter is made up of three fats in roughly equal amounts. The **ratio of these fats** strongly affects **chocolate's melting range**.

Tempering

To make chocolate melt in your mouth, chocolatiers try to maximise the amount of Type V crystals in their creations using a process called **tempering**. This involves:

- **Heating** the chocolate to about 40 °C to make sure all the various crystal forms are melted.
- **Cooling** it gradually to 28 °C to give a mixture of Type IV and Type V crystals.
- **Heating it again**. This time to 32 °C to melt the Type IV crystals, leaving only Type V. It is then poured into moulds where it sets.

Crystallisation

The **fats in cocoa butter** can form **six different types** of crystals, which melt at different temperatures:

Type	Melts at	Taste notes
I	17.3 °C	Soft, crumbly
II	23.3 °C	Crumbly, melts easily
III	25.5 °C	Firm but melts easily
IV	27.3 °C	Firmer but melts easily
V	33.8 °C	Best for eating: melts near body temperature, crisp snap
VI	36.3 °C	Too hard

Did you know ...?
Chocolate with Type VI crystals is sometimes used to make **heat-resistant** chocolate for army survival packs.

Download this
Poster, fact sheet and activity for age range 11–14 from the *Education in Chemistry* website: rsc.li/3u6Welq

The melting range of chocolate depends on the types of crystals that chocolatiers create in the mixture.