

Researching melting points

Outstanding Science Year 4 - States of matter - OS4C003

Learning Objective



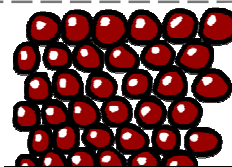
I can research the melting and boiling points of different materials.

Me:   

Teacher:   

Melting and boiling

In a solid, the particles have little energy and are packed tightly together. This causes solids to tend to keep their shape.



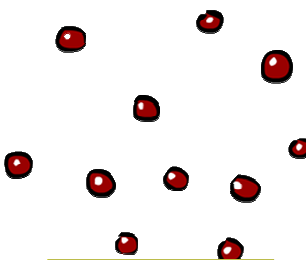
Particles in a solid

When we **heat** a solid, we are giving the particles more **energy**. When the particles get enough energy, they stop being packed together and start to slide over one another. The **solid** has become a **liquid**. When a solid is heated and **changes state** to become a liquid, it is called **melting**. The temperature at which this happens is called the **melting point**. Melting points vary from material to material. The melting point of water is 0°C.



Particles in a liquid

If we keep on adding energy to this liquid, eventually the particles will have enough energy to change state again and become a **gas**. When a liquid becomes a gas, this is called **evaporation**. However, the temperature at which the bulk of the liquid **boils** into a gas is called the **boiling point**.

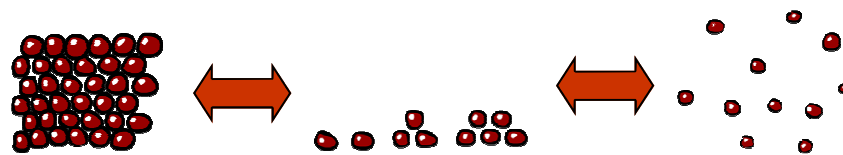


Particles in a gas

National Curriculum Statutory Requirements

4C2 - observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C); **LKS2W6** - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

We can reverse these changes. If we cool a gas, the particles don't have enough energy and so the gas becomes a liquid. This is called **condensation**. If we keep cooling the liquid, the particles don't have enough energy and the liquid becomes a solid. This is called **freezing**.



Activity

Research the melting and boiling points of six different metals by carrying out a **networking activity**.

There are three different versions of the table. Each table has some information provided and some information missing.

Fill in the missing information on your table by asking other children in your class. Remember to ask **scientific questions**, such as "What is the melting point of copper?" instead of just copying from their sheet.

When you have all of the information, create a **bar chart** showing the melting point of the different metals on the writing frame provided,

You might find it helpful to **round** the melting points to the **nearest 100 degrees** and put this information into the bar chart.

Table showing the melting and boiling points of different metals

Metal	Melting point (°C)	Boiling point (°C)
Aluminium	660	2470
Copper	1085	2562
Gold	1064	2970
Iron	1538	2862
Lead	327	1749
Mercury	-39	357

This sheet contains all of the information on the metals.

Discussion

Can you place these metals in order of melting point, lowest first?

Can you place these metals in order of boiling point, lowest first?

Which metal is liquid at room temperature?

Bar chart showing the melting points of different metals

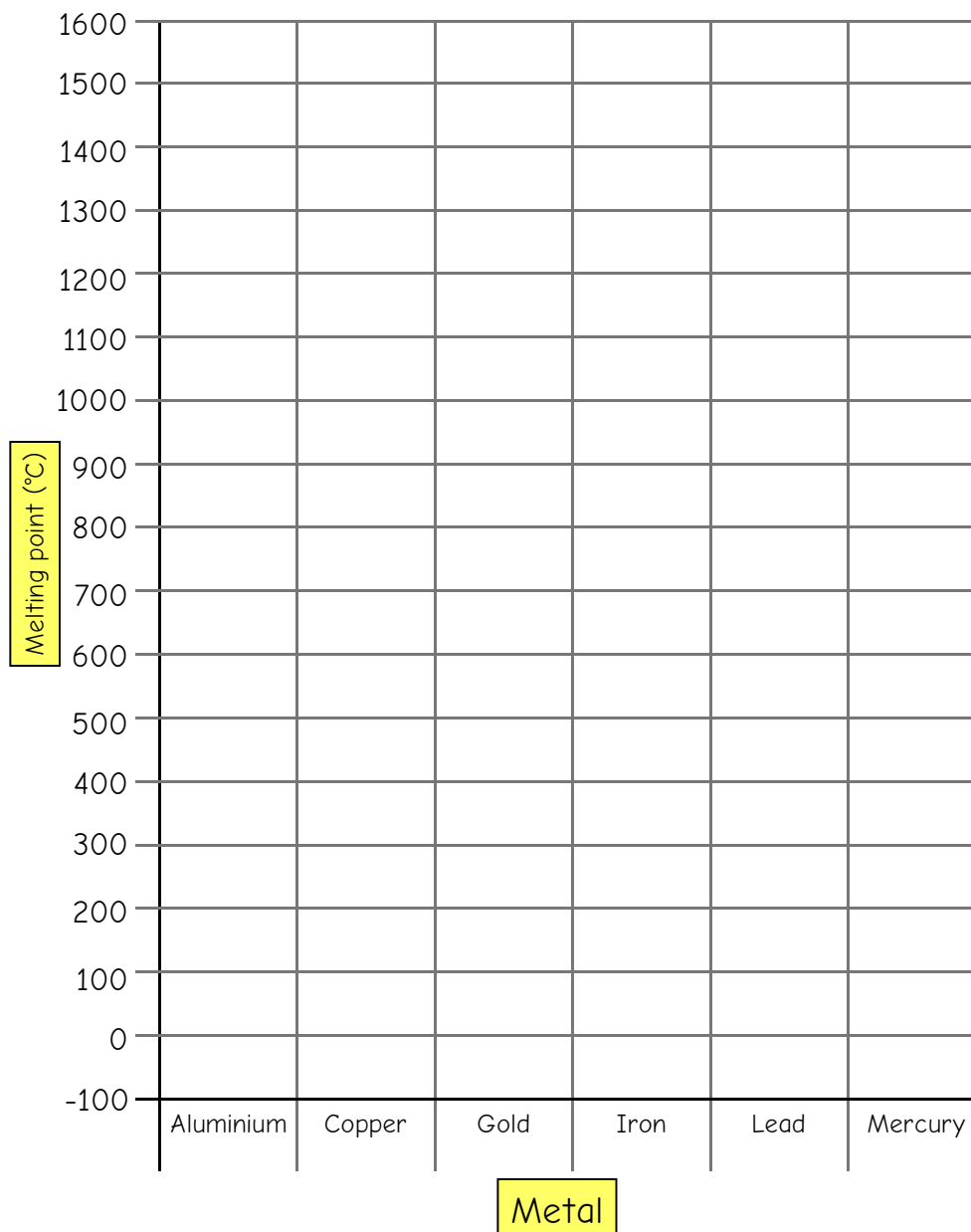


Table showing the melting and boiling points of different metals

Metal	Melting point (°C)	Boiling point (°C)
Aluminium		
Copper	1085	
Gold		
Iron	1538	
Lead		1749
Mercury		357

Networking Sheet 1

Discussion

Can you place these metals in order of melting point, lowest first?

Can you place these metals in order of boiling point, lowest first?

Which metal is liquid at room temperature?

Bar chart showing the melting points of different metals

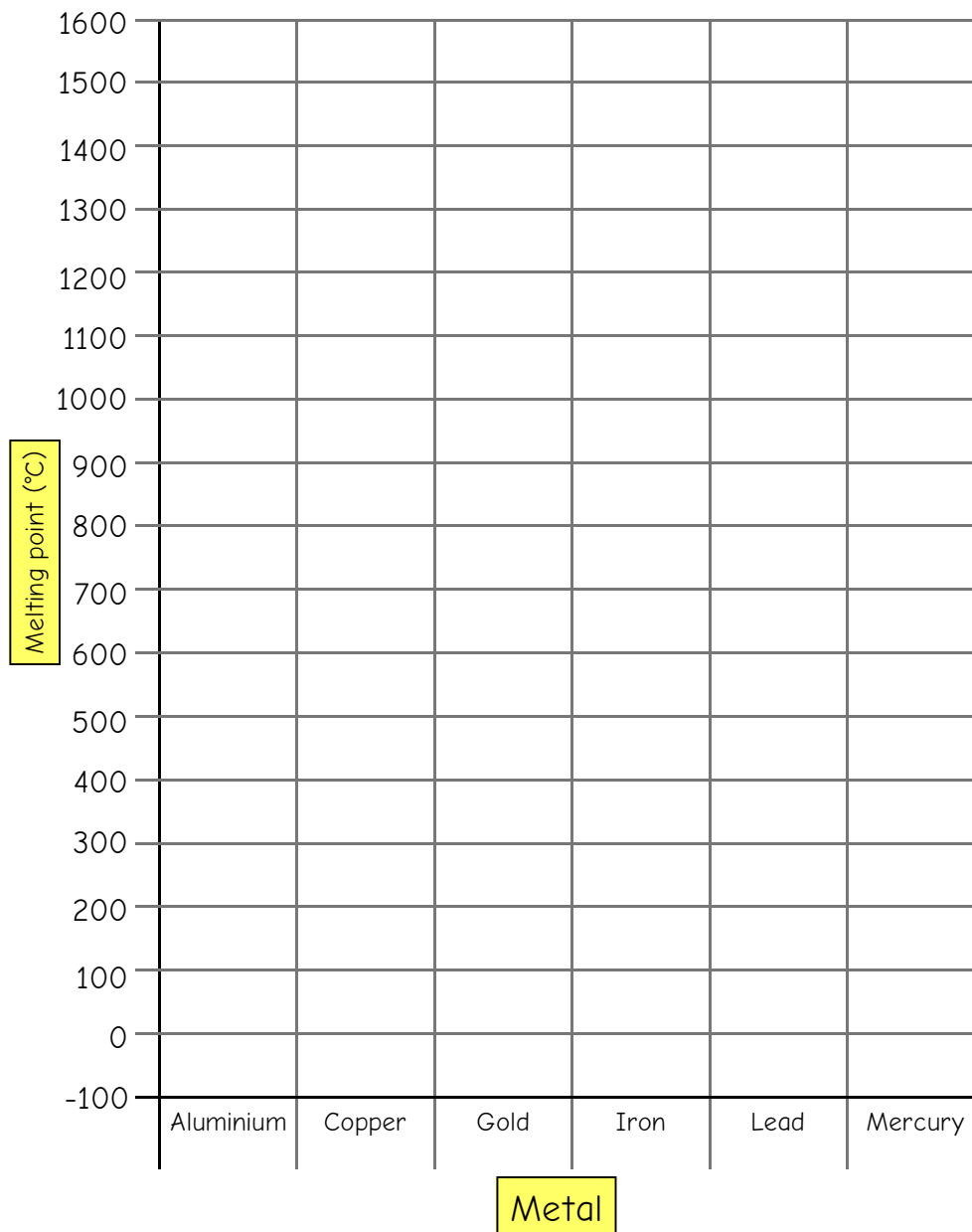


Table showing the melting and boiling points of different metals

Metal	Melting point (°C)	Boiling point (°C)
Aluminium		
Copper		2562
Gold	1064	
Iron		2862
Lead	327	
Mercury		

Networking Sheet 2

Discussion

Can you place these metals in order of melting point, lowest first?

Can you place these metals in order of boiling point, lowest first?

Which metal is liquid at room temperature?

Bar chart showing the melting points of different metals

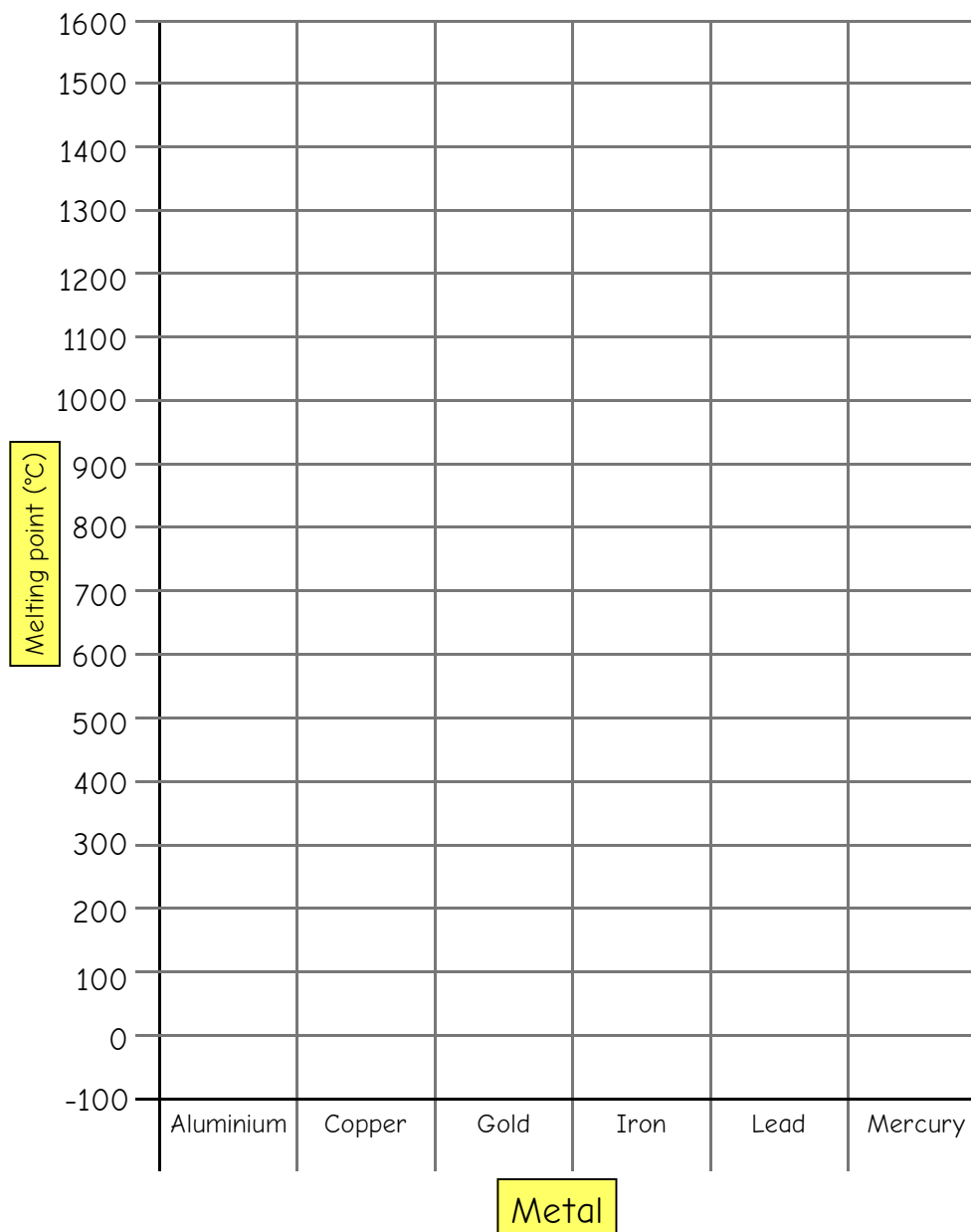


Table showing the melting and boiling points of different metals

Metal	Melting point (°C)	Boiling point (°C)
Aluminium	660	2470
Copper		
Gold		2970
Iron		
Lead		
Mercury	-39	

Networking sheet 3

Discussion

Can you place these metals in order of melting point, lowest first?

Can you place these metals in order of boiling point, lowest first?

Which metal is liquid at room temperature?

Bar chart showing the melting points of different metals

