

Properties of Metals and Materials

1. Sort the materials listed below into the table.

iron	wood	steel	concrete	porcelain
cardboard	aluminium		fabric	plastic

Metals	Non-metals

2. Tick the properties to show which apply to metals and non-metals.

	Metals	Non-metals
malleable and ductile		
low melting and boiling points		
high density		
conducts electricity		
conducts heat		
strong		
dull		
brittle		
non-magnetic		

3. Draw **one** line from each type of material to the correct description.

polymers

ceramics

composites

These materials are good insulators of heat and electricity. They are brittle and stiff.

These materials are made of two or more materials together, combining the useful properties in the new material.

These materials are good insulators of heat and electricity. They are usually flexible, lightweight, and strong.

4. Tick **two** examples of polymers from the list below.

- ☐ bone china
- ☐ concrete
- ☐ fibreglass
- ☐ glass
- ☐ nylon
- ☐ PVC

5. Tick **two** examples of ceramics from the list below.

- ☐ bone china
- ☐ concrete
- ☐ fibreglass
- ☐ glass
- ☐ nylon
- ☐ PVC

6. Tick **two** examples of composites from the list below.

- ☐ bone china
- ☐ concrete
- ☐ fibreglass
- ☐ glass
- ☐ nylon
- ☐ PVC

7. The floor of a car park is made by pouring concrete over a mesh sheet made of steel.



- a. What type of material is steel reinforced concrete?

Concrete has a low density and is lightweight, however, it is brittle and can crack easily under pressure. Steel is very dense and heavy, but strong and hardwearing.

- b. Explain why concrete is reinforced using a steel mesh.



Properties of Metals and Materials **Answers**

1. Sort the materials listed below into the table.

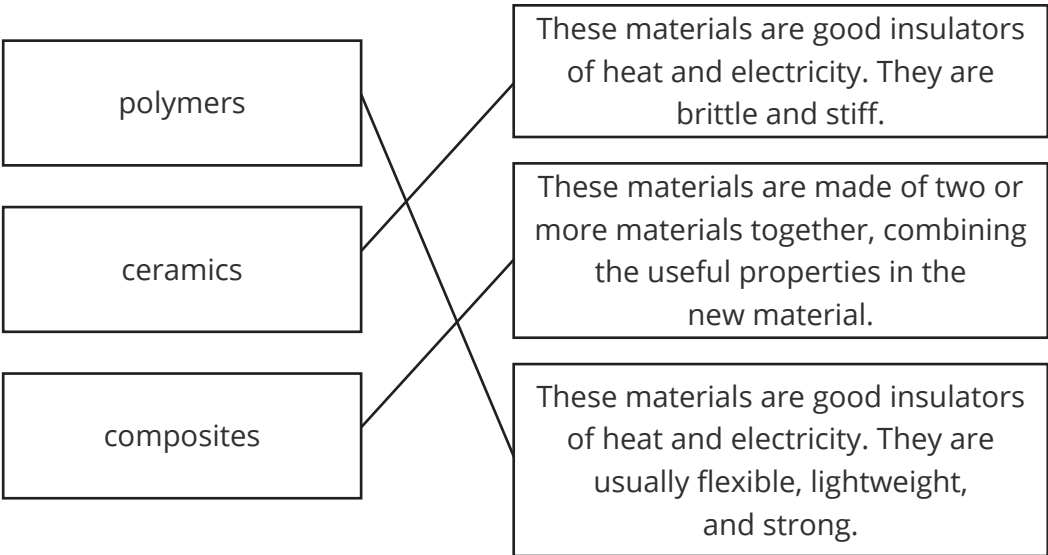
iron	wood	steel	concrete	porcelain
cardboard	aluminium		fabric	plastic

Metals	Non-metals
aluminium iron steel	cardboard concrete fabric plastic porcelain wood

2. Tick the properties to show which apply to metals and non-metals.

	Metals	Non-metals
malleable and ductile	✓	
low melting and boiling points		✓
high density	✓	
conducts electricity	✓	
conducts heat	✓	
strong	✓	
dull		✓
brittle		✓
non-magnetic		✓

3. Draw **one** line from each type of material to the correct description.



4. Tick **two** examples of polymers from the list below.

- ☐ bone china
- ☐ concrete
- ☐ fibreglass
- ☐ glass
- ☒ **nylon**
- ☒ **PVC**

5. Tick **two** examples of ceramics from the list below.

- ☒ **bone china**
- ☐ concrete
- ☐ fibreglass
- ☒ **glass**
- ☐ nylon
- ☐ PVC

6. Tick **two** examples of composites from the list below.

- ☐ bone china
- ☒ **concrete**
- ☒ **fibreglass**
- ☐ glass
- ☐ nylon
- ☐ PVC

7. The floor of a car park is made by pouring concrete over a mesh sheet made of steel.



- a. What type of material is steel reinforced concrete?

composite material

Concrete has a low density and is lightweight, however, it is brittle and can crack easily under pressure. Steel is very dense and heavy, but strong and hardwearing.

- b. Explain why concrete is reinforced using a steel mesh.

A composite material combines the useful properties of two or more materials.

The concrete has a lower density than steel, so overall the structure is not as dense.

The steel is strong and hardwearing, so provides support to the otherwise brittle concrete.