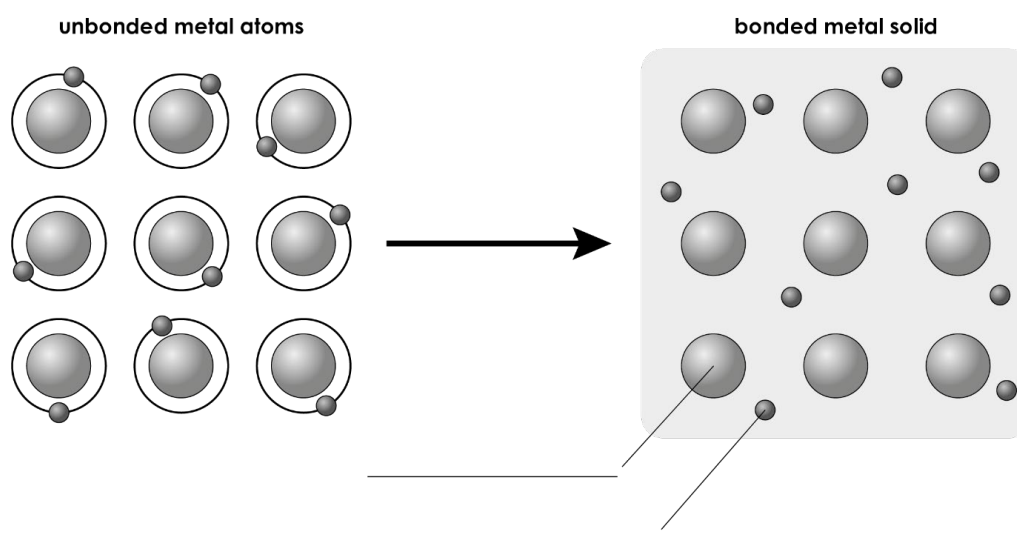


Metallic structure and bonding

- 1 The diagram shows how metal atoms bond together to form a metal solid.



- (a) Label the diagram. (2 marks)
- (b) Name the type of bonding in the bonded metal solid.

_____ (1 mark)

- (c) Which group in the periodic table does this metal belong to?

_____ (1 mark)

- (d) Give two differences between the particles in the unbonded metal atoms and the particles in the bonded metal solid.

- _____
 - _____
- _____ (2 marks)

- (e) Name the force that exists between the two different types of particles in the bonded metal solid.

_____ (1 mark)

- (f) Describe how:

- i. the positively charged particles move in a bonded metal solid

_____ (1 mark)

- ii. the negatively charged particles move in a bonded metal solid.

_____ (1 mark)

(g) Name the type of structure shown in the diagram of a bonded metal solid.

_____ (1 mark)

(h) Give two ways in which the diagram would differ if it represented the bonding in magnesium metal.

_____ (2 marks)

(i) Explain your answer to part (h).

_____ (2 marks)

2 The table shows some physical properties of copper:

Melting point/°C	1083
Boiling point/°C	2595
Electrical and heat conductivity	copper is an excellent conductor of electricity and heat
Malleability	copper is malleable

Explain each property. You should refer to metallic bonding and structure.

(a) Melting point: _____

_____ (2 marks)

(b) Boiling point: _____

_____ (2 marks)

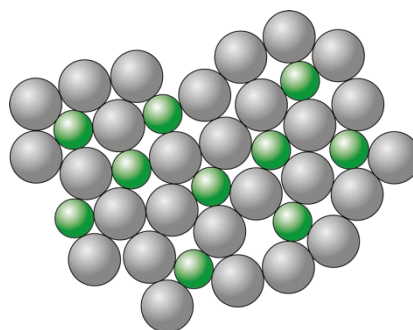
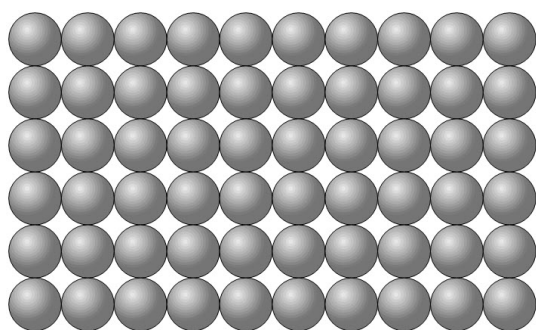
(c) Electrical and heat conductivity: _____

_____ (2 marks)

(d) Malleability: _____

_____ (2 marks)

- 3 These diagrams represent the particles in a pure metal and in an alloy.



- (a) What is an alloy?

(1 mark)

- (b) Describe what will happen when a force is applied horizontally to the pure metal.

(1 mark)

- (c) i. Describe what will happen when a force is applied horizontally to the alloy.

(1 mark)

- ii. Explain why this is.

(1 mark)

- (d) Explain why alloys have different uses to pure metals.

(1 mark)

[Total: 27 marks]



Which question(s) did you get wrong? Why?

What will you do next time you're asked a similar question?